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Chen et al.

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(45) **Date of Patent: Mar. 1, 2016**

(54) **OPTICAL IMAGING LENS AND ELECTRONIC DEVICE COMPRISING THE SAME**

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(21) Appl. No.: **14/529,160**

(22) Filed: **Oct. 31, 2014**

(30) **Foreign Application Priority Data**

Aug. 6, 2014 (CN) 2014 1 0383432

(51) **Int. Cl.**
G02B 9/62 (2006.01)
G02B 13/00 (2006.01)
H04N 5/225 (2006.01)

(52) **U.S. Cl.**
CPC ***G02B 13/0045*** (2013.01); ***G02B 9/62*** (2013.01); ***H04N 5/2252*** (2013.01); ***H04N 5/2253*** (2013.01)

(58) **Field of Classification Search**
CPC G02B 13/0045; G02B 9/62; H04N 5/2254
See application file for complete search history.

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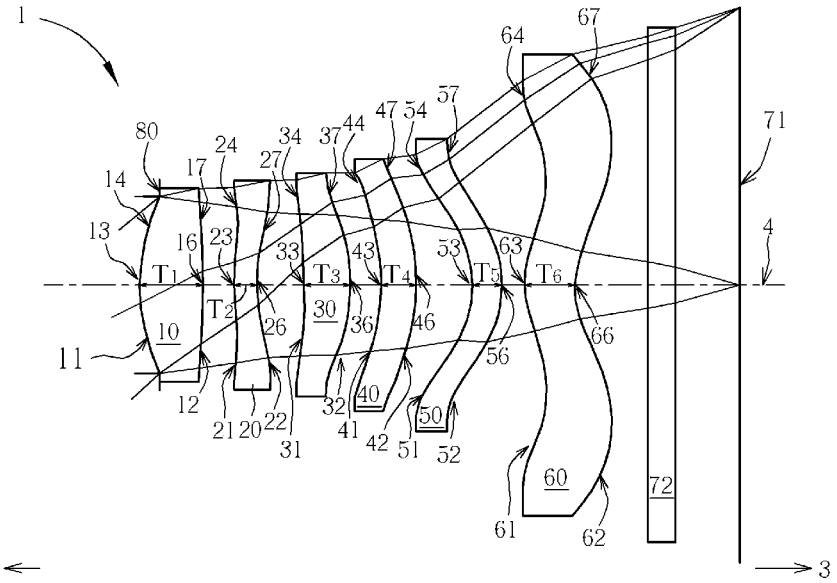
(74) *Attorney, Agent, or Firm* — Winston Hsu; Scott Margo

(57) **ABSTRACT**

An optical imaging lens includes: a first, second, third, fourth, fifth and sixth lens element, the first lens element has a positive refracting power, the second lens element has a negative refracting power and an object-side surface with a concave part in a vicinity of its periphery, the third lens element has an object-side surface with a concave part in a vicinity of its periphery, and an image-side surface with a convex part in a vicinity of the optical axis, the fourth lens has an image-side surface with a convex part in a vicinity of the optical axis, the fifth lens element has object-side surface with a concave part in a vicinity of its periphery, and an image-side surface with a convex part in a vicinity of the optical axis, the sixth lens element has an image-side surface with a convex part in a vicinity of its periphery.

18 Claims, 25 Drawing Sheets



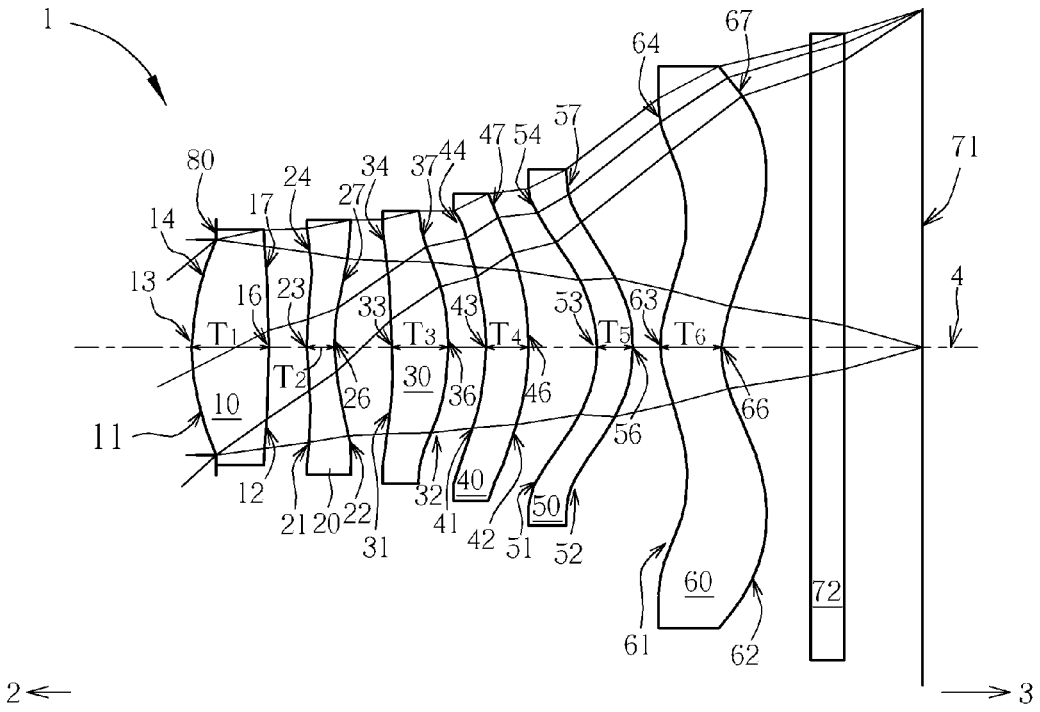


FIG. 1

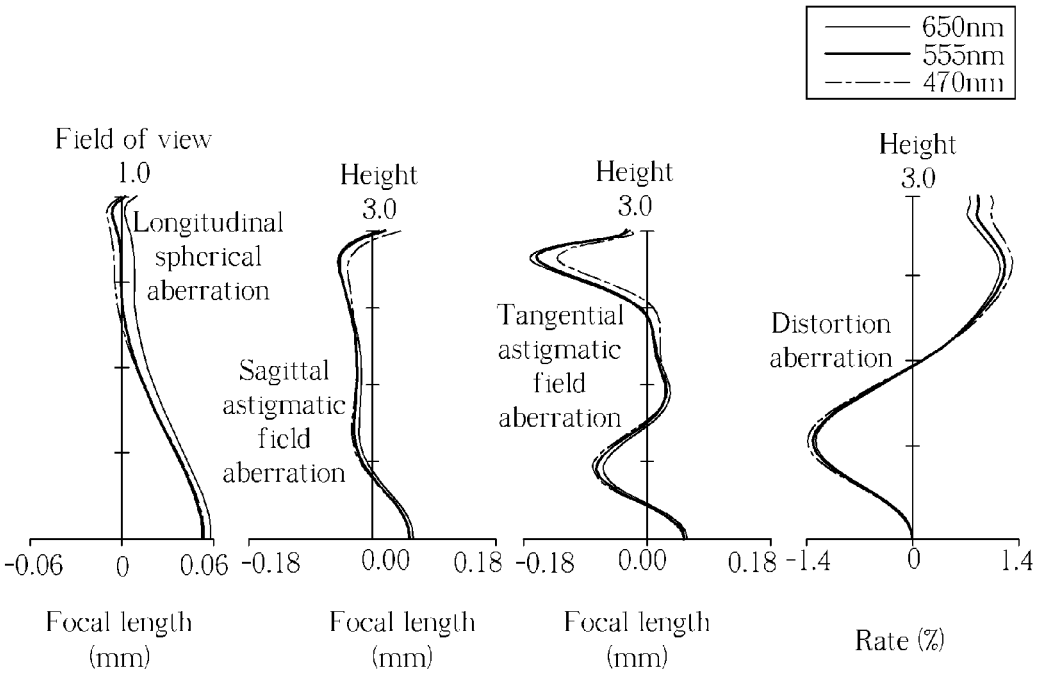


FIG. 2A FIG. 2B FIG. 2C FIG. 2D

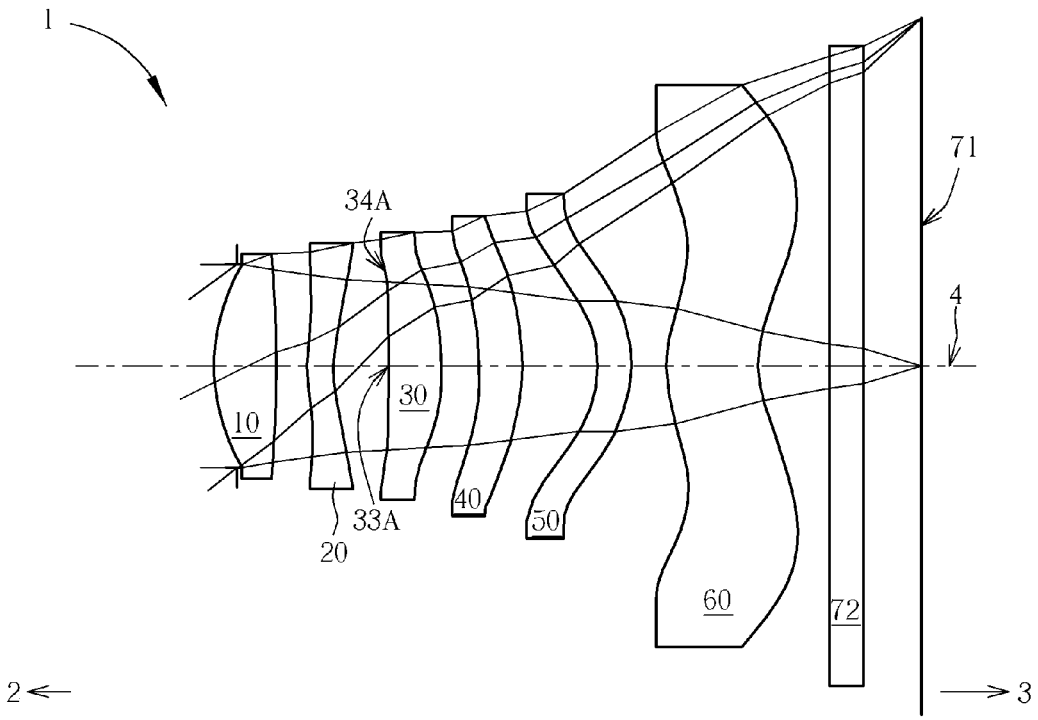


FIG. 3

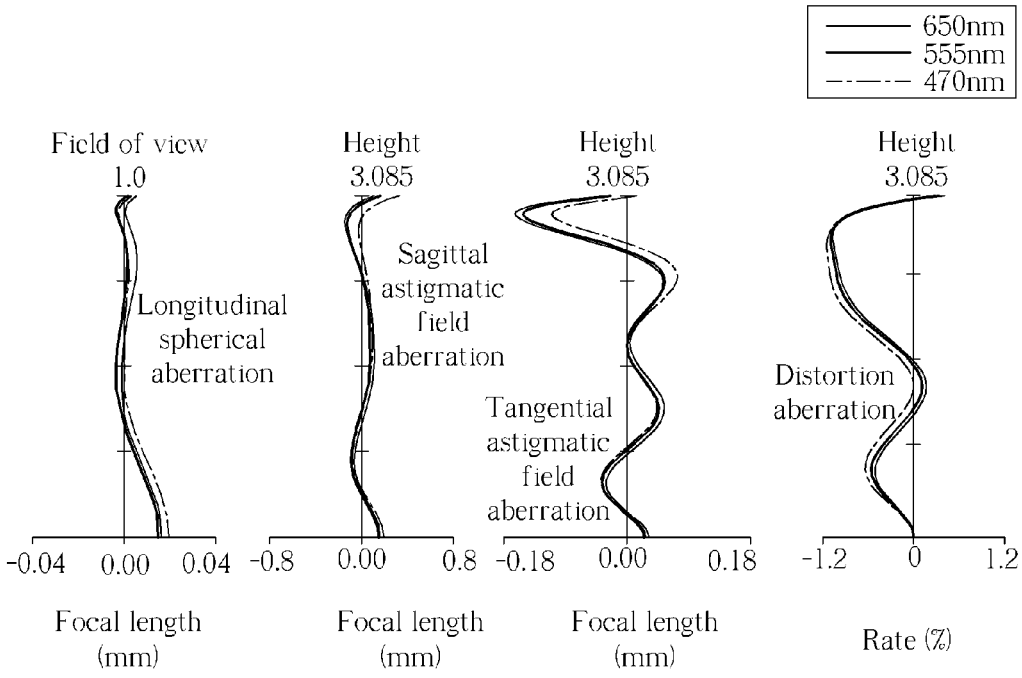


FIG. 4A FIG. 4B FIG. 4C FIG. 4D

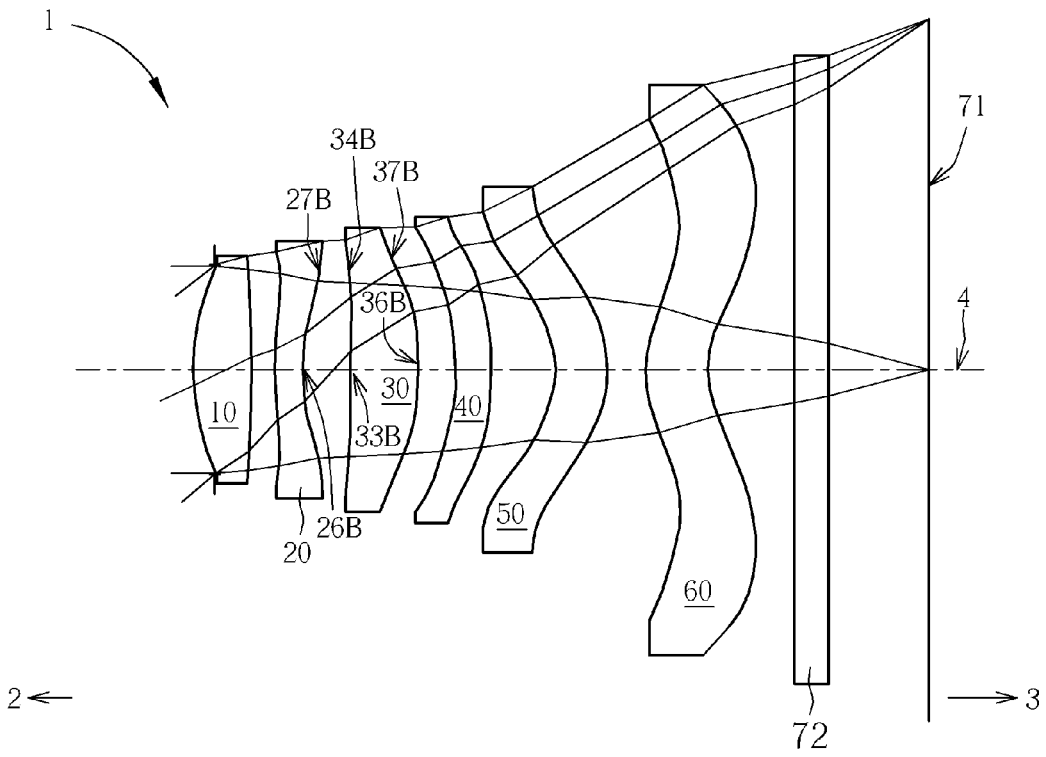


FIG. 5

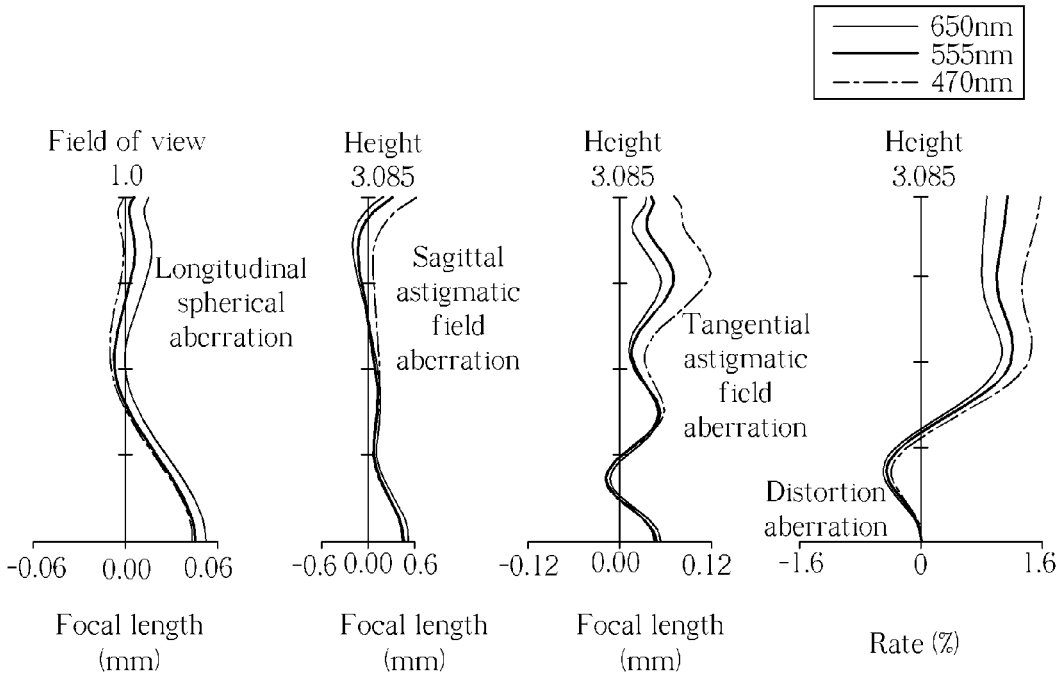


FIG. 6A FIG. 6B FIG. 6C FIG. 6D

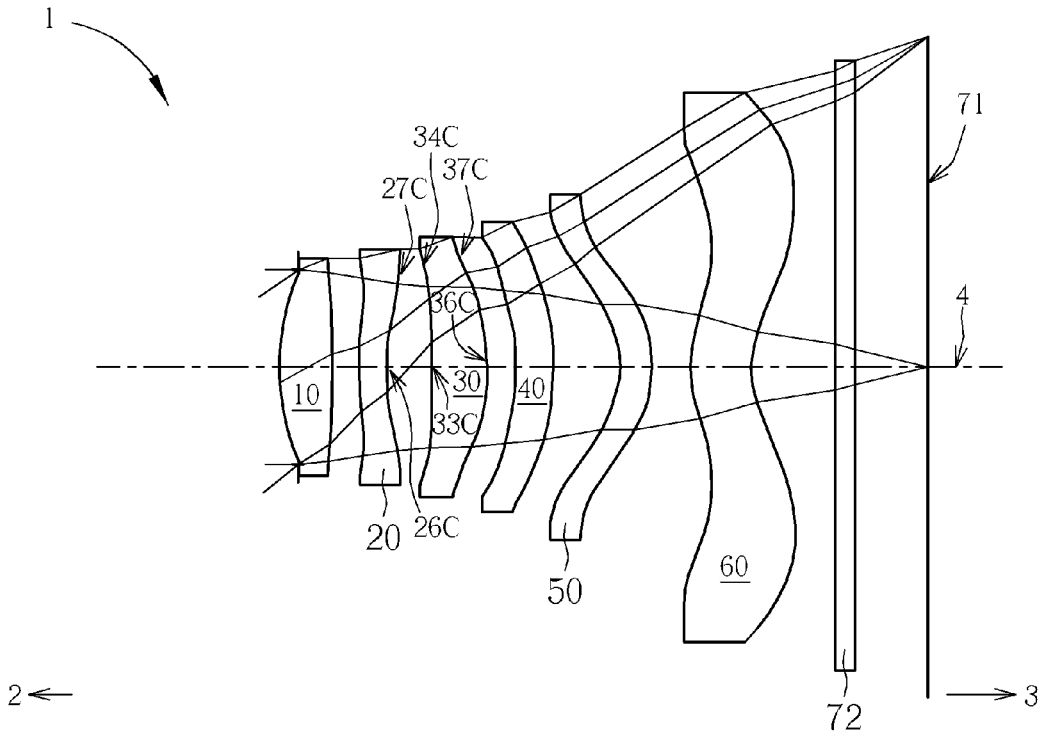


FIG. 7

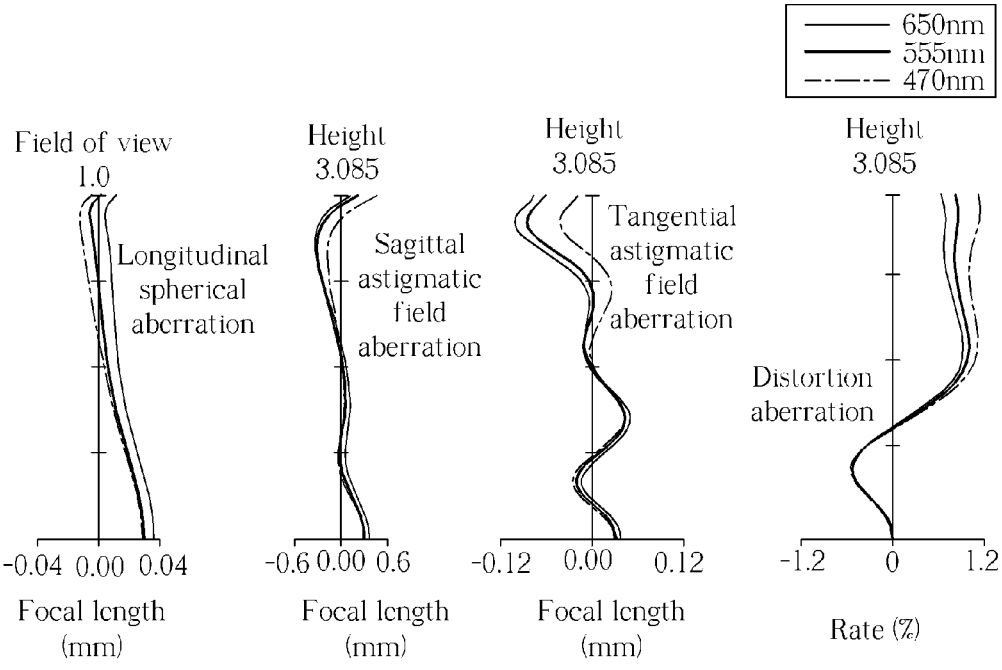


FIG. 8A FIG. 8B FIG. 8C FIG. 8D

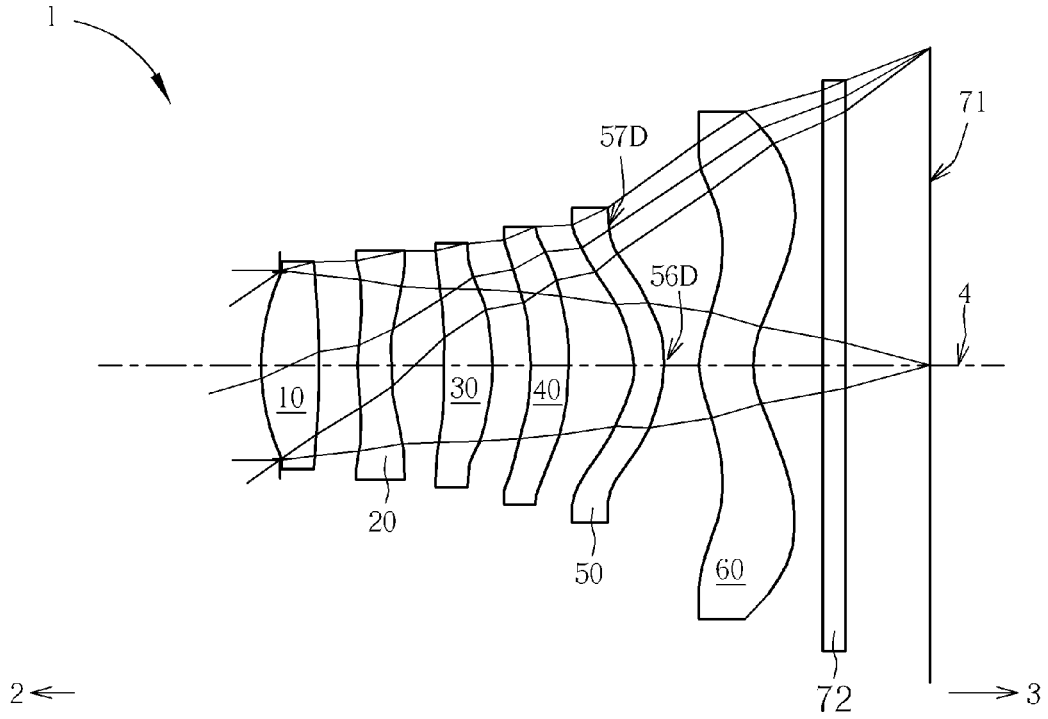


FIG. 9

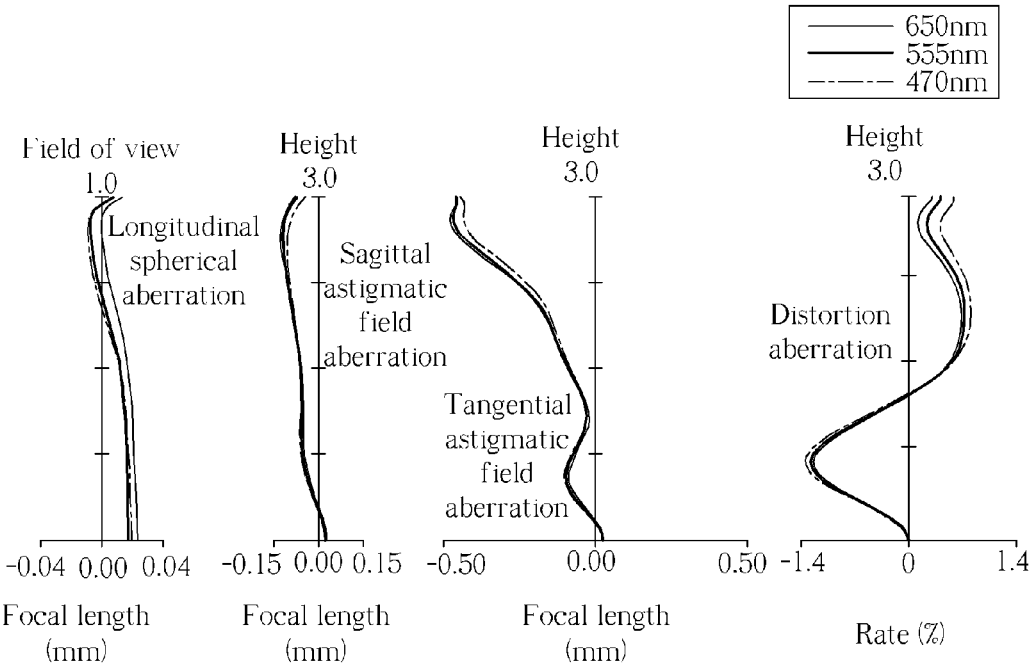


FIG. 10A FIG. 10B FIG. 10C FIG. 10D

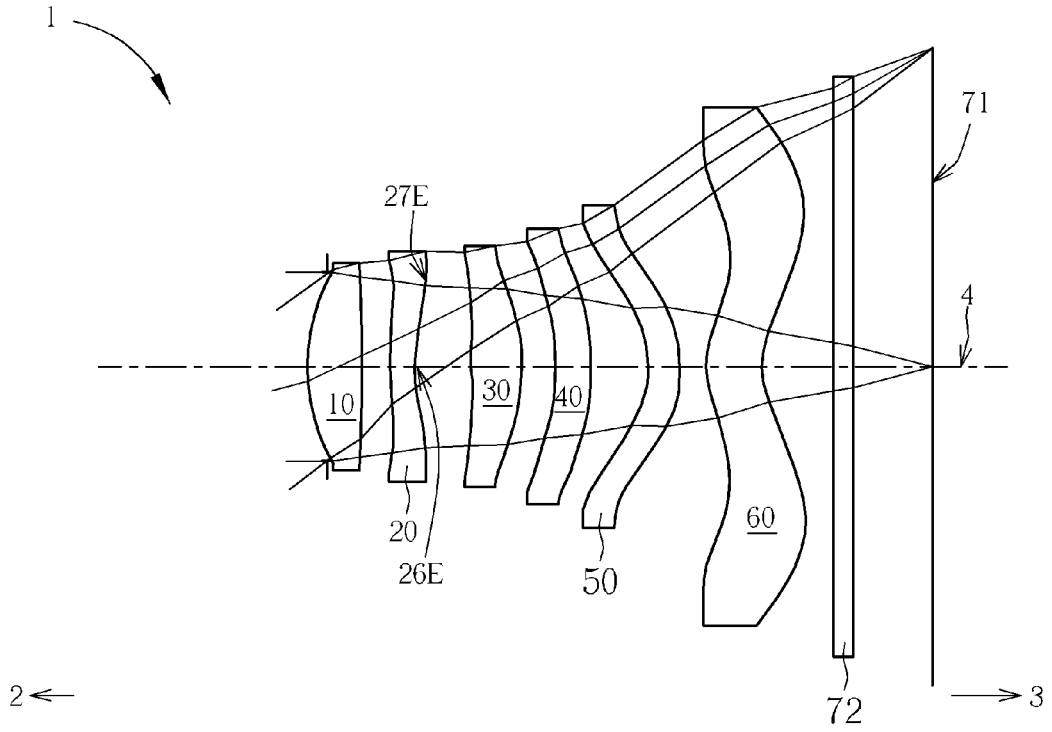


FIG. 11

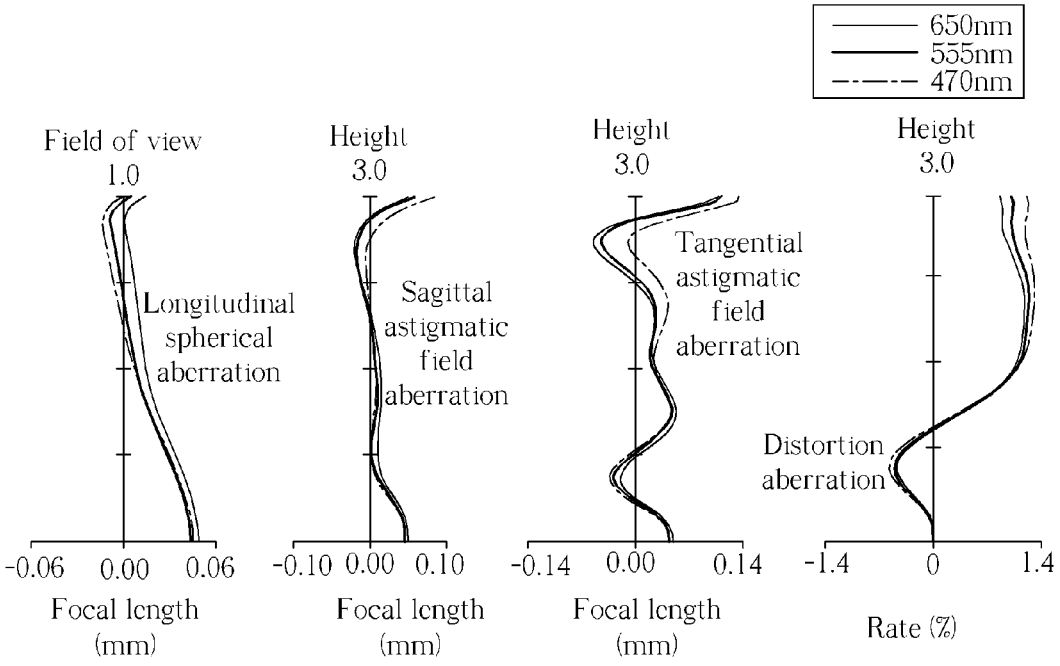


FIG. 12A FIG. 12B FIG. 12C FIG. 12D

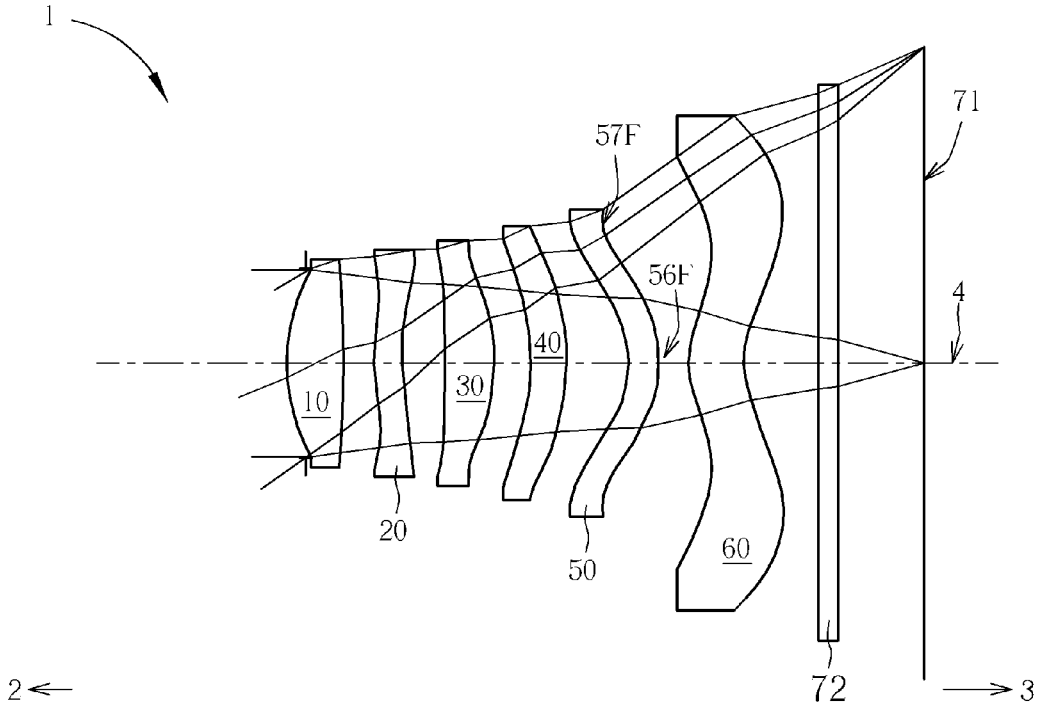


FIG. 13

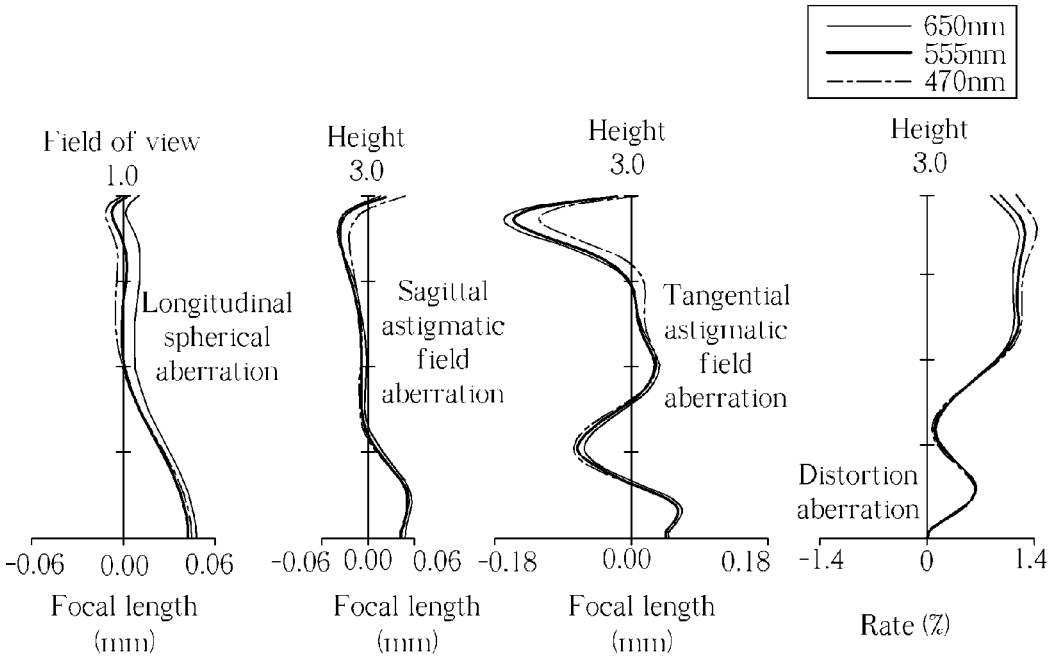


FIG. 14A FIG. 14B FIG. 14C FIG. 14D

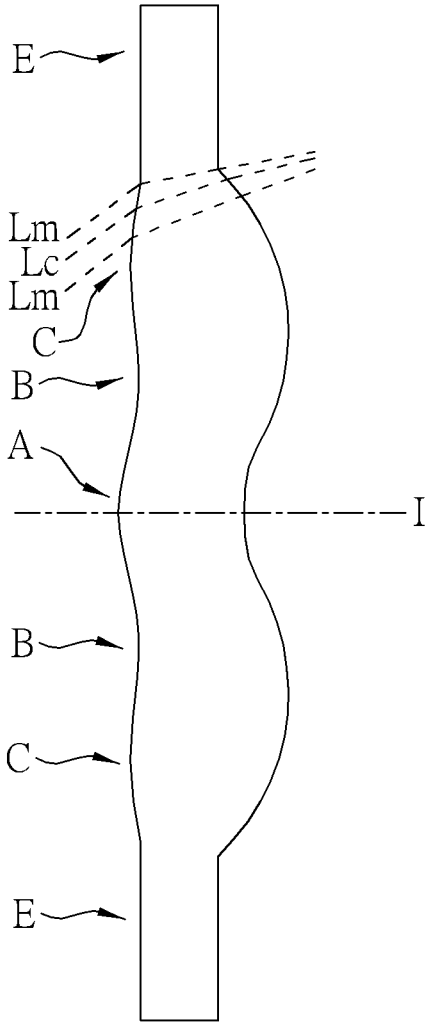


FIG. 15

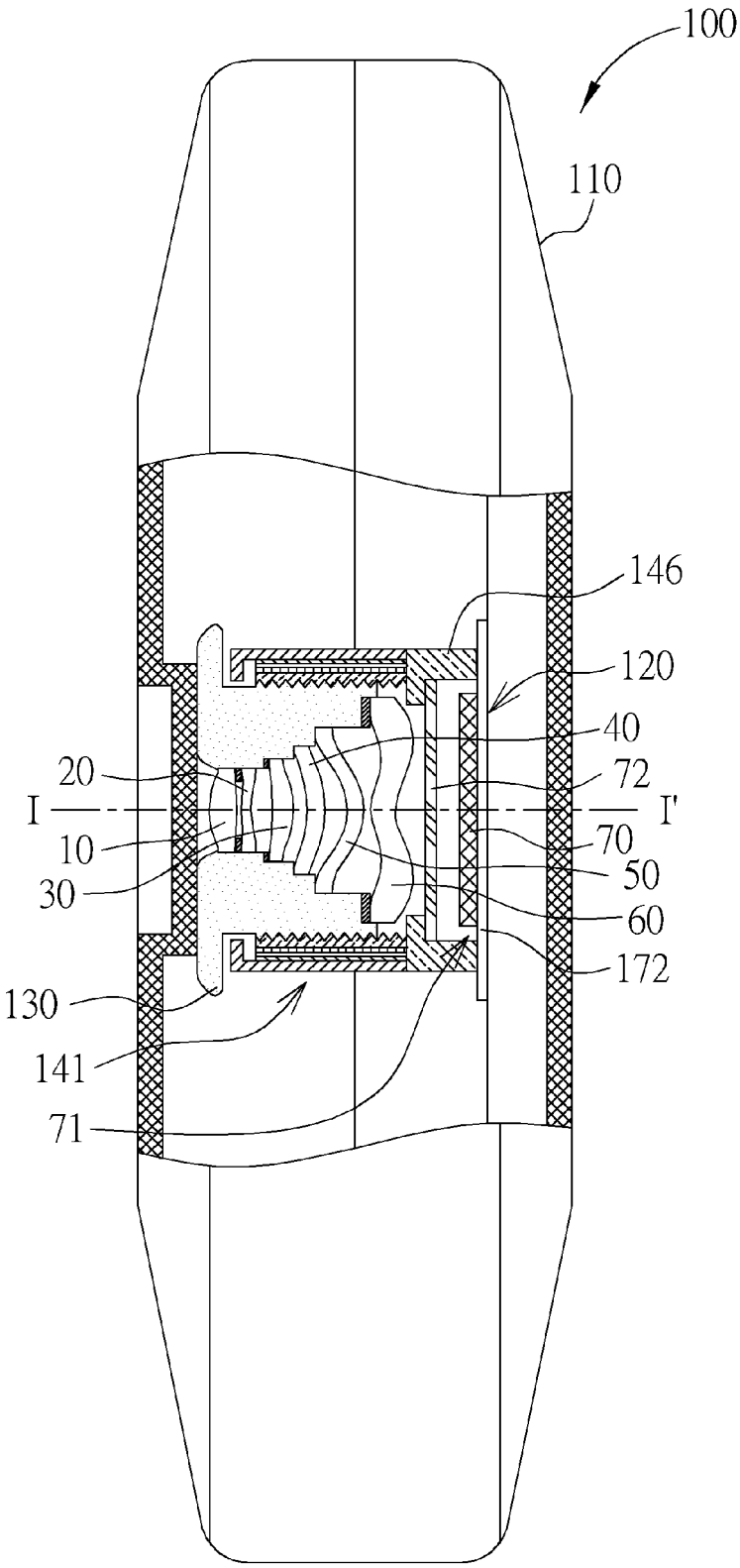
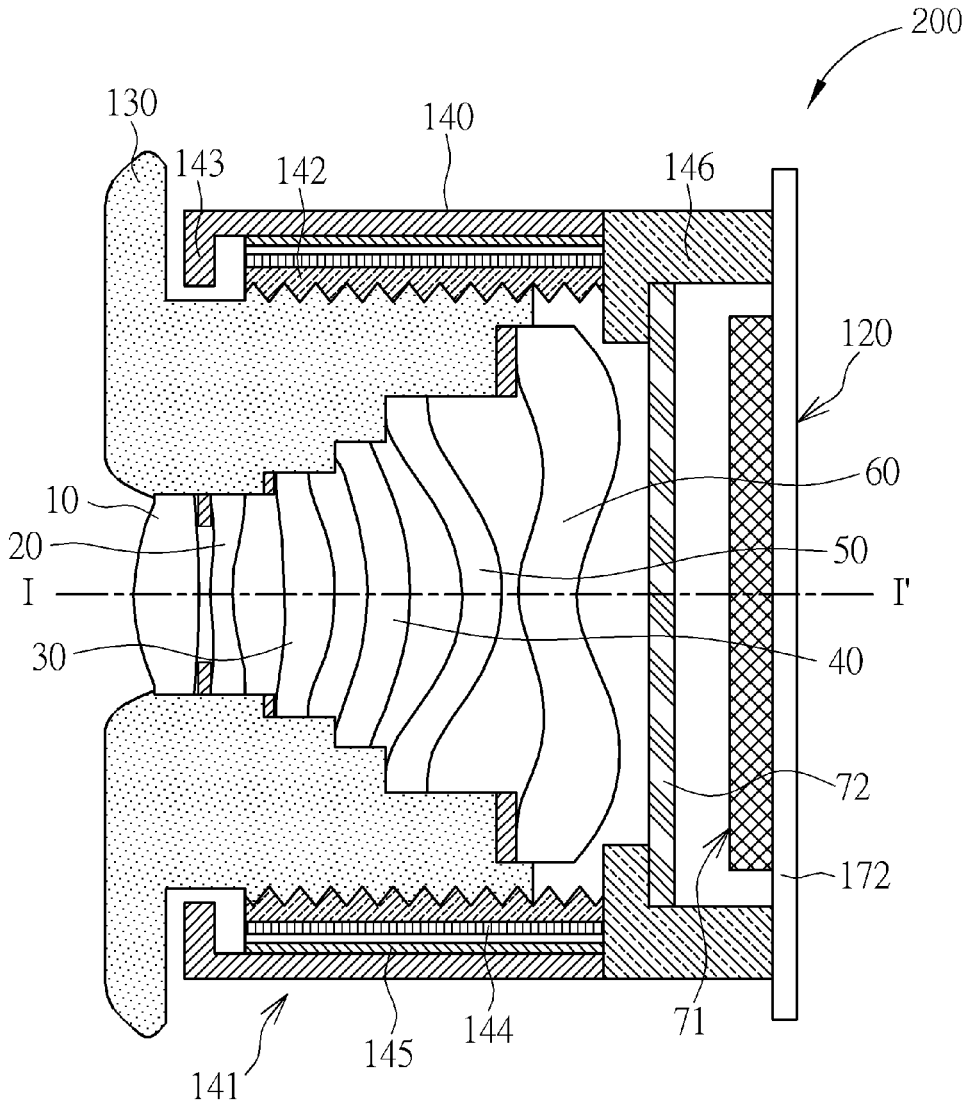


FIG. 16


200
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141

FIG. 17

First Example							
EFL(Effective Focal Length)= 3.747 mm., HFOV(Half Field Of View)= 38.86 deg., Total Length=4.978mm., Fno= 2.0							
No.		Curvature Radius	Ape. Stop Distance Lens Thickness Air Gap	Refractive Index	Abbe No.	Focal Length	Material
	Object	infinity	infinity				
80	Ape. Stop	infinity	-0.2150				
11	First Lens	2.1286	0.6720	1.544	56.114	3.654	Plastic
12		-28.2389	0.0830				
21	Second Lens	3.6255	0.2400	1.640	23.529	-5.543	Plastic
22		1.7528	0.2790				
31	Third Lens	18.2592	0.4879	1.544	56.114	4.201	Plastic
32		-2.5981	0.0966				
41	Fourth Lens	-2.3615	0.3732	1.544	56.114	-211.433	Plastic
42		-2.5454	0.3367				
51	Fifth Lens	-0.7987	0.3068	1.640	23.529	-6.412	Plastic
52		-1.1391	0.0982				
61	Sixth Lens	0.8594	0.5344	1.531	55.744	9.817	Plastic
62		0.8061	0.5000				
72	Filter	infinity	0.2100				
	Filter -Image Plane	infinity	0.7598				
71	Image Plane	infinity					

FIG. 18

No.	K	a2	a4	a6	a8
First object-side surface 11	-0.788241328	0	0.018667188	-0.019907372	0.050626567
First image-side surface 12	100.0632989	0	-0.057924901	0.154149431	-0.184202026
Second object-side surface 21	-0.177849952	0	-0.271102065	0.354852172	-0.29309755
Second image-side surface 22	-6.344671967	0	-0.132609391	0.160406687	-0.086495332
Third object-side surface 31	43.35650551	0	-0.115339518	-0.025745316	0.061380937
Third image-side surface 32	2.54507765	0	-0.057844736	-0.018885496	0.076569059
Fourth object-side surface 41	2.457999386	0	0.010940168	0.041037232	0.072947616
Fourth image-side surface 42	2.302429129	0	-0.003853567	0.025848811	0.045545503
Fifth object-side surface 51	-7.532255412	0	-0.354079584	0.308687011	-0.193153666
Fifth image-side surface 52	-1.142086699	0	0.034246715	-0.039664292	0.021953037
Sixth object-side surface 61	-6.260292749	0	-0.094760484	0.012821823	-0.001967777
First object-side surface 11	-4.128273897	0	-0.067799059	0.013175679	-0.002066956

No.	a10	a12	a14	a16
First object-side surface 11	-0.055277379	-0.017921103	0.066098443	-0.033218202
First image-side surface 12	0.04244797	0.018279411	0	0
Second object-side surface 21	-0.016685522	0.066359227	0.054590908	-0.03511852
Second image-side surface 22	-0.081069759	0.028945816	0.059082466	-0.026710238
Third object-side surface 31	-0.030120571	0.025262272	-0.000682497	-0.004332193
Third image-side surface 32	-0.015259548	0.022529758	-0.004167863	-0.004098052
Fourth object-side surface 41	-0.05123955	-0.003966888	-0.007421528	0.009791369
Fourth image-side surface 42	-0.043080599	0.009545655	-0.00441277	0.003209212
Fifth object-side surface 51	0.175673813	-0.115886272	0.039811129	-0.005570674
Fifth image-side surface 52	0.020813065	-0.010522751	1.95822E-05	0.000334499
Sixth object-side surface 61	0.000999012	-0.00014165	-1.81065E-06	9.57057E-07
First object-side surface 11	0.000203514	-1.86403E-05	1.61713E-06	-4.23656E-08

FIG. 19

Second Example							
EFL(Effective Focal Length)= 3.689 mm., HFOV(Half Field Of View)= 40.00 deg., Total Length=5.052mm., Fno= 2.0							
No.		Curvature Radius	Ape. Stop Distance Lens Thickness Air Gap	Refractive Index	Abbe No.	Focal Length	Material
	Object	infinity	infinity				
80	Ape. Stop	infinity	-0.1778				
11	First Lens	2.1737	0.5341	1.544	56.114	3.774	Plastic
12		-36.1287	0.1128				
21	Second Lens	3.4750	0.2389	1.640	23.529	-5.782	Plastic
22		1.7498	0.3020				
31	Third Lens	15.6099	0.4881	1.544	56.114	4.100	Plastic
32		-2.5841	0.0688				
41	Fourth Lens	-2.3695	0.3739	1.544	56.114	-203.171	Plastic
42		-2.5561	0.3866				
51	Fifth Lens	-0.7439	0.3032	1.640	23.529	-4.379	Plastic
52		-1.1715	0.0698				
61	Sixth Lens	0.9948	0.8341	1.531	55.744	5.707	Plastic
62		1.0475	0.5000				
72	Filter	infinity	0.2100				
	Filter -Image Plane	infinity	0.6297				
71	Image Plane	infinity					

FIG. 20

No.	K	a2	a4	a6	a8
First object-side surface 11	-0.773831103	0	0.018727657	-0.018716325	0.050164818
First image-side surface 12	-124.6807736	0	-0.056602696	0.153951622	-0.184194867
Second object-side surface 21	0.309321519	0	-0.269358085	0.354345536	-0.294166342
Second image-side surface 22	-6.147200863	0	-0.130092268	0.162138921	-0.085993289
Third object-side surface 31	-18.95571664	0	-0.117151754	-0.027727721	0.061009165
Third image-side surface 32	2.613858	0	-0.060693837	-0.019598167	0.075692065
Fourth object-side surface 41	2.448817835	0	0.014312624	0.040029891	0.072877536
Fourth image-side surface 42	2.32071787	0	-0.010676753	0.027546152	0.046421291
Fifth object-side surface 51	-6.263050726	0	-0.348905228	0.308609517	-0.193351109
Fifth image-side surface 52	-1.042376707	0	0.02892082	-0.039783651	0.022025793
Sixth object-side surface 61	-7.589394732	0	-0.094407636	0.012849508	-0.001966066
First object-side surface 11	-4.013260581	0	-0.067793019	0.013130998	-0.00206619

No.	a10	a12	a14	a16
First object-side surface 11	-0.056683561	-0.01928623	0.065226293	-0.033524078
First image-side surface 12	0.041778071	0.01613238	0	0
Second object-side surface 21	-0.017545625	0.066378634	0.055359433	-0.033802473
Second image-side surface 22	-0.081057313	0.029156925	0.059364466	-0.026408562
Third object-side surface 31	-0.029949994	0.025188118	-0.000813996	-0.004479324
Third image-side surface 32	-0.015589001	0.02242093	-0.004201976	-0.004068964
Fourth object-side surface 41	-0.050637405	-0.003527522	-0.007251168	0.009829279
Fourth image-side surface 42	-0.042885081	0.00954827	-0.004434111	0.003200191
Fifth object-side surface 51	0.17568503	-0.115871369	0.03979592	-0.005597036
Fifth image-side surface 52	0.020841467	-0.010513634	2.31137E-05	0.000336512
Sixth object-side surface 61	0.000999691	-0.000141392	-1.7366E-06	9.75416E-07
First object-side surface 11	0.000204252	-1.85232E-05	1.62877E-06	-4.18985E-08

FIG. 21

Third Example							
EFL(Effective Focal Length)= 3.677 mm., HFOV(Half Field Of View)= 39.99 deg., Total Length=5.171mm., Fno= 2.0							
No.		Curvature Radius	Ape. Stop Distance Lens Thickness Air Gap	Refractive Index	Abbe No.	Focal Length	Material
	Object	infinity	infinity				
80	Ape. Stop	infinity	-0.1800				
11	First Lens	2.2896	0.4971	1.544	56.114	3.781	Plastic
12		-19.3838	0.0999				
21	Second Lens	3.3765	0.2398	1.640	23.529	-5.538	Plastic
22		1.6868	0.2960				
31	Third Lens	19.0799	0.5870	1.544	56.114	4.078	Plastic
32		-2.4929	0.0840				
41	Fourth Lens	-2.3613	0.3147	1.544	56.114	-197.366	Plastic
42		-2.5278	0.3142				
51	Fifth Lens	-0.8076	0.4546	1.640	23.529	-9.262	Plastic
52		-1.1399	0.0699				
61	Sixth Lens	0.9107	0.5439	1.531	55.744	11.487	Plastic
62		0.8477	0.5000				
72	Filter	infinity	0.2100				
	Filter -Image Plane	infinity	0.9604				
71	Image Plane	infinity					

FIG. 22

No.	K	a2	a4	a6	a8
First object-side surface 11	-0.98822676	0	0.017371648	-0.023921337	0.057912097
First image-side surface 12	339.0924368	0	-0.047658466	0.177641155	-0.18379519
Second object-side surface 21	0	0	-0.245432915	0.362717452	-0.286550184
Second image-side surface 22	-5.941793453	0	-0.111549531	0.162935961	-0.088015515
Third object-side surface 31	0	0	-0.085818447	-0.040442441	0.060734171
Third image-side surface 32	2.428711271	0	-0.057786775	-0.013682524	0.072680566
Fourth object-side surface 41	2.465855143	0	-0.019292524	0.036257899	0.078310955
Fourth image-side surface 42	2.27891572	0	-0.018183976	0.016491905	0.046262116
Fifth object-side surface 51	-6.306295869	0	-0.358307021	0.31096366	-0.189940942
Fifth image-side surface 52	-1.091415191	0	0.031980494	-0.038887021	0.020768039
Sixth object-side surface 61	-4.868096697	0	-0.081030135	0.010600299	-0.002181774
First object-side surface 11	-3.94324261	0	-0.057026771	0.006696208	-0.000491588

No.	a10	a12	a14	a16
First object-side surface 11	-0.052733149	-0.020213716	0.062801489	-0.03500363
First image-side surface 12	0.040829735	0.005331566	0	0
Second object-side surface 21	-0.025736605	0.051328671	0.045395866	-0.031650329
Second image-side surface 22	-0.081783653	0.027798029	0.05784661	-0.027584511
Third object-side surface 31	-0.029285748	0.025185625	-0.00130657	-0.005061031
Third image-side surface 32	-0.019107872	0.020291718	-0.005029938	-0.004121685
Fourth object-side surface 41	-0.047677564	-0.003293394	-0.008277665	0.008537509
Fourth image-side surface 42	-0.041783215	0.010264118	-0.004182903	0.003187269
Fifth object-side surface 51	0.176593912	-0.115947718	0.039602331	-0.005743837
Fifth image-side surface 52	0.020651899	-0.010475677	4.41639E-05	0.00033678
Sixth object-side surface 61	0.000985736	-0.000140882	-1.41372E-06	1.02065E-06
First object-side surface 11	-1.16995E-05	4.35845E-06	3.01744E-07	-8.16199E-08

FIG. 23

Fourth Example							
EFL(Effective Focal Length)= 3.696 mm., HFOV(Half Field Of View)= 39.85 deg., Total Length=5.034mm., Fno= 2.0							
No.		Curvature Radius	Ape. Stop Distance Lens Thickness Air Gap	Refractive Index	Abbe No.	Focal Length	Material
	Object	infinity	infinity				
80	Ape. Stop	infinity	-0.1800				
11	First Lens	2.2445	0.5089	1.544	56.114	3.741	Plastic
12		-20.8684	0.1103				
21	Second Lens	3.5951	0.2398	1.640	23.529	-5.418	Plastic
22		1.7251	0.3193				
31	Third Lens	28.3363	0.5201	1.544	56.114	4.209	Plastic
32		-2.4847	0.0699				
41	Fourth Lens	-2.3664	0.3509	1.544	56.114	-238.165	Plastic
42		-2.5365	0.5081				
51	Fifth Lens	-0.8357	0.3000	1.640	23.529	-10.887	Plastic
52		-1.0821	0.1194				
61	Sixth Lens	0.9948	0.5873	1.531	55.744	21.436	Plastic
62		0.8660	0.5000				
72	Filter	infinity	0.2100				
	Filter -Image Plane	infinity	0.6898				
71	Image Plane	infinity					

FIG. 24

No.	K	a2	a4	a6	a8
First object-side surface 11	-0.955223881	0	0.016507689	-0.020043384	0.053637435
First image-side surface 12	-68.28073392	0	-0.055097541	0.154354051	-0.175265737
Second object-side surface 21	0	0	-0.269544664	0.366697993	-0.292076334
Second image-side surface 22	-7.175780799	0	-0.116089971	0.155849976	-0.091807329
Third object-side surface 31	0	0	-0.095770663	-0.040859209	0.056485905
Third image-side surface 32	2.582237105	0	-0.050329846	-0.017605818	0.071603909
Fourth object-side surface 41	2.47454915	0	-0.006868455	0.037692749	0.077494942
Fourth image-side surface 42	2.248716429	0	-0.007365112	0.024492737	0.044172142
Fifth object-side surface 51	-6.397804292	0	-0.356120289	0.309753245	-0.192537203
Fifth image-side surface 52	-1.059495257	0	0.029918568	-0.038297335	0.022672698
Sixth object-side surface 61	-6.706088789	0	-0.086997384	0.012211216	-0.002090821
First object-side surface 11	-4.130637935	0	-0.060955093	0.011744057	-0.002022787

No.	a10	a12	a14	a16
First object-side surface 11	-0.055489462	-0.020272793	0.063666664	-0.034442366
First image-side surface 12	0.044400141	0.003130223	0	0
Second object-side surface 21	-0.023719499	0.059214978	0.052363265	-0.030643513
Second image-side surface 22	-0.081182153	0.030286868	0.05945374	-0.027587515
Third object-side surface 31	-0.032092485	0.024039266	-0.001176921	-0.004245856
Third image-side surface 32	-0.018187112	0.021345222	-0.004432564	-0.003960049
Fourth object-side surface 41	-0.049352973	-0.00388169	-0.007914952	0.009198673
Fourth image-side surface 42	-0.04328011	0.009668412	-0.00440541	0.003118086
Fifth object-side surface 51	0.175572106	-0.116048875	0.039768983	-0.005553148
Fifth image-side surface 52	0.02101991	-0.010497838	1.56023E-05	0.000319387
Sixth object-side surface 61	0.00098783	-0.000141945	-1.68386E-06	9.92365E-07
First object-side surface 11	0.000226164	-1.70029E-05	1.50092E-06	-1.00665E-07

FIG. 25

Fifth Example							
EFL(Effective Focal Length)= 3.690 mm., HFOV(Half Field Of View)= 39.11 deg., Total Length=4.958mm., Fno= 2.0							
No.		Curvature Radius	Ape. Stop Distance Lens Thickness Air Gap	Refractive Index	Abbe No.	Focal Length	Material
	Object	infinity	infinity				
80	Ape. Stop	infinity	-0.1800				
11	First Lens	2.2341	0.5538	1.544	56.114	3.714	Plastic
12		-19.9969	0.0691				
21	Second Lens	3.7366	0.3273	1.640	23.529	-5.457	Plastic
22		1.7496	0.2720				
31	Third Lens	15.8873	0.4980	1.544	56.114	4.101	Plastic
32		-2.5772	0.0806				
41	Fourth Lens	-2.3606	0.3830	1.544	56.114	-225.565	Plastic
42		-2.5446	0.3304				
51	Fifth Lens	-0.8063	0.2999	1.640	23.529	-6.514	Plastic
52		-1.1433	0.0697				
61	Sixth Lens	0.8467	0.5294	1.531	55.744	9.418	Plastic
62		0.7972	0.5000				
72	Filter	infinity	0.2100				
	Filter -Image Plane	infinity	0.8353				
71	Image Plane	infinity					

FIG. 26

No.	K	a2	a4	a6	a8
First object-side surface 11	-0.715406459	0	0.019781749	-0.019634139	0.050449704
First image-side surface 12	134.4758413	0	-0.057614969	0.154656707	-0.183912291
Second object-side surface 21	0	0	-0.27023526	0.354984726	-0.293047088
Second image-side surface 22	-6.395714298	0	-0.132777307	0.160467951	-0.086466005
Third object-side surface 31	0	0	-0.115585352	-0.026127769	0.061277413
Third image-side surface 32	2.554219048	0	-0.059563995	-0.01885867	0.076643443
Fourth object-side surface 41	2.452000972	0	0.015618743	0.041912356	0.073295949
Fourth image-side surface 42	2.311559818	0	-0.00420717	0.026358744	0.045743772
Fifth object-side surface 51	-7.929951533	0	-0.354811442	0.307740338	-0.193492735
Fifth image-side surface 52	-1.173001615	0	0.036555637	-0.039613871	0.021972614
Sixth object-side surface 61	-6.233093166	0	-0.094382943	0.012842272	-0.001967429
First object-side surface 11	-4.042519114	0	-0.068469574	0.013233326	-0.002067901

No.	a10	a12	a14	a16
First object-side surface 11	-0.055741195	-0.01859392	0.06528506	-0.034142985
First image-side surface 12	0.042415943	0.017867096	0	0
Second object-side surface 21	-0.016566791	0.066694873	0.055121558	-0.034434209
Second image-side surface 22	-0.081067934	0.028945138	0.059096718	-0.026677929
Third object-side surface 31	-0.030113082	0.025278414	-0.000692567	-0.004370841
Third image-side surface 32	-0.015244896	0.02252596	-0.004167024	-0.004087708
Fourth object-side surface 41	-0.050999305	-0.003788872	-0.007297374	0.009871547
Fourth image-side surface 42	-0.043051594	0.009525491	-0.004437566	0.003190939
Fifth object-side surface 51	0.17559902	-0.115895293	0.039823441	-0.005556085
Fifth image-side surface 52	0.02090065	-0.010497431	2.7506E-05	0.000337292
Sixth object-side surface 61	0.000998846	-0.000141731	-1.83249E-06	9.52781E-07
First object-side surface 11	0.000202278	-1.88761E-05	1.58432E-06	-4.62858E-08

FIG. 27

Sixth Example							
EFL(Effective Focal Length)= 3.677 mm., HFOV(Half Field Of View)= 39.21 deg., Total Length=4.903mm., Fno= 2.0							
No.		Curvature Radius	Apc. Stop Distance Lens Thickness Air Gap	Refractive Index	Abbe No.	Focal Length	Material
	Object	infinity	infinity				
80	Ape. Stop	infinity	-0.1800				
11	First Lens	2.1252	0.5068	1.544	56.114	3.850	Plastic
12		-176.5140	0.1434				
21	Second Lens	3.8501	0.2398	1.640	23.529	-5.352	Plastic
22		1.7752	0.2463				
31	Third Lens	13.9073	0.4824	1.544	56.114	4.027	Plastic
32		-2.5790	0.1596				
41	Fourth Lens	-2.3696	0.3414	1.544	56.114	-196.524	Plastic
42		-2.5464	0.3973				
51	Fifth Lens	-0.8010	0.3105	1.640	23.529	-6.743	Plastic
52		-1.1311	0.0699				
61	Sixth Lens	0.8461	0.5434	1.531	55.744	9.026	Plastic
62		0.7975	0.5000				
72	Filter	infinity	0.2100				
	Filter -Image Plane	infinity	0.7521				
71	Image Plane	infinity					

FIG. 28

No.	K	a2	a4	a6	a8
First object-side surface 11	-0.810184603	0	0.018370249	-0.020185545	0.0495186
First image-side surface 12	3067.053244	0	-0.058404758	0.153828763	-0.184259926
Second object-side surface 21	0	0	-0.271437679	0.355014446	-0.292717727
Second image-side surface 22	-6.95649677	0	-0.133809136	0.159196707	-0.087464976
Third object-side surface 31	0	0	-0.114386985	-0.024735765	0.061919661
Third image-side surface 32	2.526745853	0	-0.055529145	-0.018494929	0.076438097
Fourth object-side surface 41	2.447753494	0	0.007693323	0.040142848	0.073783087
Fourth image-side surface 42	2.304932387	0	-0.002562223	0.028655967	0.046380481
Fifth object-side surface 51	-7.740164587	0	-0.352656238	0.307183023	-0.193873969
Fifth image-side surface 52	-1.097211575	0	0.031732603	-0.039891399	0.021929978
Sixth object-side surface 61	-6.288579396	0	-0.09473869	0.012820547	-0.00196778
First object-side surface 11	-3.983141432	0	-0.069193225	0.013133706	-0.002045283

No.	a10	a12	a14	a16
First object-side surface 11	-0.056634669	-0.019091113	0.065344057	-0.033412581
First image-side surface 12	0.042081557	0.017528549	0	0
Second object-side surface 21	-0.016275528	0.066778503	0.05508828	-0.03450301
Second image-side surface 22	-0.081530891	0.028821624	0.059127868	-0.026600638
Third object-side surface 31	-0.029997699	0.025165541	-0.000864221	-0.004532879
Third image-side surface 32	-0.015293877	0.02258884	-0.004082181	-0.004016437
Fourth object-side surface 41	-0.050573578	-0.003649856	-0.007296931	0.009837467
Fourth image-side surface 42	-0.042985605	0.009506965	-0.004447625	0.003191654
Fifth object-side surface 51	0.175471515	-0.115942734	0.039782723	-0.00559249
Fifth image-side surface 52	0.020802203	-0.010527829	1.86409E-05	0.000334617
Sixth object-side surface 61	0.000999215	-0.000141604	-1.80278E-06	9.58014E-07
First object-side surface 11	0.000206556	-1.84352E-05	1.61149E-06	-4.68569E-08

FIG. 29

Seventh Example							
EFL(Effective Focal Length)= 3.735 mm., HFOV(Half Field Of View)= 38.81 deg., Total Length=4.982mm., Fno= 2.0							
No.		Curvature Radius	Ape. Stop Distance Lens Thickness Air Gap	Refractive Index	Abbe No.	Focal Length	Material
	Object	infinity	infinity				
80	Ape. Stop	infinity	-0.1800				
11	First Lens	2.1892	0.5536	1.544	56.114	3.821	Plastic
12		-40.2400	0.1070				
21	Second Lens	3.6028	0.2398	1.640	23.529	-5.591	Plastic
22		1.7546	0.2778				
31	Third Lens	16.8362	0.4800	1.544	56.114	4.109	Plastic
32		-2.5623	0.1165				
41	Fourth Lens	-2.3681	0.3526	1.544	56.114	-197.563	Plastic
42		-2.5485	0.2759				
51	Fifth Lens	-0.8325	0.3000	1.640	23.529	-6.932	Plastic
52		-1.1677	0.1843				
61	Sixth Lens	0.8458	0.5363	1.531	55.744	10.219	Plastic
62		0.7806	0.5000				
72	Filter	infinity	0.2100				
	Filter -Image Plane	infinity	0.8486				
71	Image Plane	infinity					

FIG. 30

No.	K	a2	a4	a6	a8
First object-side surface 11	-0.843070468	0	0.017919175	-0.01993191	0.050289747
First image-side surface 12	0	0	-0.055164085	0.153765933	-0.184952282
Second object-side surface 21	0	0	-0.269863836	0.355632658	-0.292916586
Second image-side surface 22	-6.689682849	0	-0.13311826	0.160920379	-0.085930323
Third object-side surface 31	0	0	-0.116166627	-0.025687988	0.061366914
Third image-side surface 32	2.552981515	0	-0.056264789	-0.018857874	0.076701718
Fourth object-side surface 41	2.449597844	0	0.007847729	0.040926017	0.072618731
Fourth image-side surface 42	2.293701699	0	-0.007818575	0.025581686	0.045544835
Fifth object-side surface 51	-7.99516143	0	-0.348589525	0.30876449	-0.193289105
Fifth image-side surface 52	-1.133536339	0	0.034390674	-0.039168765	0.022087992
Sixth object-side surface 61	-6.545502129	0	-0.098280153	0.01246869	-0.002050004
First object-side surface 11	-4.29792901	0	-0.067897548	0.012351848	-0.002008937

No.	a10	a12	a14	a16
First object-side surface 11	-0.055846154	-0.018587364	0.065424366	-0.033852965
First image-side surface 12	0.041519299	0.017195166	0	0
Second object-side surface 21	-0.016616058	0.066566226	0.054979539	-0.034591571
Second image-side surface 22	-0.08069231	0.029179274	0.059274782	-0.026571672
Third object-side surface 31	-0.030129267	0.025253612	-0.000714659	-0.004399243
Third image-side surface 32	-0.015189141	0.022522031	-0.004210674	-0.004140265
Fourth object-side surface 41	-0.051400883	-0.003939817	-0.007300659	0.009935587
Fourth image-side surface 42	-0.043136304	0.009493444	-0.00444578	0.003191728
Fifth object-side surface 51	0.175652936	-0.115871686	0.039825902	-0.005559469
Fifth image-side surface 52	0.020842092	-0.010514652	2.17507E-05	0.000336839
Sixth object-side surface 61	0.000992444	-0.000139303	1.34497E-06	3.89144E-07
First object-side surface 11	0.000231417	-1.50336E-05	2.26151E-07	-2.27833E-08

FIG. 31

	Example 1	Example 2	Example 3	Example 4	Example 5	Example 6	Example 7
T1/AG45	1.996	1.382	1.582	1.002	1.676	1.276	2.007
T6/T2	2.226	3.492	2.268	2.449	1.617	2.266	2.237
T5/T2	1.278	1.269	1.896	1.251	0.916	1.295	1.251
AAG/T2	3.722	3.935	3.603	4.699	2.511	4.239	4.010
AG23/(AG12+AG34)	1.553	1.664	1.610	1.772	1.816	0.813	1.243
AAG/(AG12+AG56)	4.932	5.148	5.089	4.907	5.921	4.765	3.301
(AG34+AG56)/AG23	0.698	0.459	0.520	0.593	0.553	0.932	1.083
AAG/T6	1.672	1.127	1.588	1.919	1.552	1.871	1.793
T1/T3	1.377	1.094	0.847	0.978	1.112	1.051	1.153
T4/AG23	1.338	1.238	1.063	1.099	1.408	1.386	1.269
AAG/(AG12+AG34)	4.975	5.178	4.698	6.253	5.489	3.354	4.302
ALT/T4	7.004	7.414	8.379	7.145	6.767	7.101	6.984
T6/AG23	1.916	2.762	1.838	1.839	1.946	2.206	1.931
T3/T5	1.590	1.610	1.291	1.734	1.661	1.554	1.600
ALT/T5	8.521	9.145	5.801	8.358	8.642	7.808	8.208
T5/T4	0.822	0.811	1.444	0.855	0.783	0.909	0.851
AAG/T4	2.394	2.514	2.745	3.212	2.146	2.978	2.727

FIG. 32

OPTICAL IMAGING LENS AND ELECTRONIC DEVICE COMPRISING THE SAME

CROSS REFERENCE TO RELATED APPLICATION

This application claims priority to Chinese Application No. 201410383432.5, filed on Aug. 6, 2014, the contents of which are hereby incorporated by reference in their entirety for all purposes.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention generally relates to an optical imaging lens set and an electronic device which includes such optical imaging lens set. Specifically speaking, the present invention is directed to an optical imaging lens set of six lens elements and an electronic device which includes such optical imaging lens set.

2. Description of the Prior Art

In recent years, the popularity of mobile phones and digital cameras makes the sizes of various portable electronic products reduce quickly, and so does the size of the photography modules. The current trend of research is to develop an optical imaging lens set of a shorter length with uncompromised good quality. The most important characteristics of an optical imaging lens set are image quality and size.

U.S. Pat. No. 7,830,620 discloses an optical imaging lens set of six lens elements. However, in U.S. Pat. No. 7,830,620, the first lens element has negative refractive power, the second lens element has positive refractive power, and the aperture stop is disposed between the second lens element and the third lens element. This arrangement cannot achieve good optical performance. Besides, the size of the optical imaging lens set is too big to satisfy the specification requirements of consumer electronics products.

Therefore, how to reduce the total length of a photographic device, but still maintain good optical performance, is an important research objective.

SUMMARY OF THE INVENTION

In the light of the above, the present invention is capable of proposing an optical imaging lens set that is lightweight, and has a low production cost, reduced length, high resolution and high image quality. The optical imaging lens set of six lens elements of the present invention has an aperture stop, a first lens element, a second lens element, a third lens element, a fourth lens element, a fifth lens element, and a sixth lens element sequentially from an object side to an image side along an optical axis.

An optical imaging lens includes: a first, second, third, fourth, fifth and sixth lens element, the first lens element has a positive refracting power, an object-side surface is a convex surface, having a convex part in a vicinity of the optical axis, and a convex part in a vicinity of its periphery, the second lens element has a negative refracting power and an object-side surface with a concave part in a vicinity of its periphery, the third lens element has an object-side surface with a concave part in a vicinity of its periphery, and an image-side surface with a convex part in a vicinity of the optical axis, the fourth lens has an image-side surface with a convex part in a vicinity of the optical axis, the fifth lens element has object-side surface with a concave part in a vicinity of its periphery, and an image-side surface with a convex part in a vicinity of the optical axis, the sixth lens element has an image-side surface with a convex part in a vicinity of its periphery, wherein the optical imaging lens set does not include any lens element with refractive power other than said first, second, third, fourth, fifth lens elements and sixth lens element.

In the optical imaging lens set of six lens elements of the present invention, an air gap AG**12** along the optical axis is disposed between the first lens element and the second lens element, an air gap AG**23** along the optical axis is disposed between the second lens element and the third lens element, an air gap AG**34** along the optical axis is disposed between the third lens element and the fourth lens element, an air gap AG**45** along the optical axis is disposed between the fourth lens element and the fifth lens element, an air gap AG**56** along the optical axis is disposed between the fifth lens element and the sixth lens element, and the sum of total five air gaps between adjacent lens elements from the first lens element to the sixth lens element along the optical axis is AAG, AAG=AG**12**+AG**23**+AG**34**+AG**45**+AG**56**.

In the optical imaging lens set of six lens elements of the present invention, the first lens element has a first lens element thickness T**1** along the optical axis, the second lens element has a second lens element thickness T**2** along the optical axis, the third lens element has a third lens element thickness T**3** along the optical axis, the fourth lens element has a fourth lens element thickness T**4** along the optical axis, the fifth lens element has a fifth lens element thickness T**5** along the optical axis, the sixth lens element has a sixth lens element thickness T**6** along the optical axis, and the total thickness of all the lens elements in the optical imaging lens set along the optical axis is ALT, ALT=T**1**+T**2**+T**3**+T**4**+T**5**+T**6**.

In the optical imaging lens set of six lens elements of the present invention, the relationship T**1**/AG**45**≤2.1 is satisfied.

In the optical imaging lens set of six lens elements of the present invention, the relationship T**6**/T**2**≤3.5 is satisfied.

In the optical imaging lens set of six lens elements of the present invention, the relationship 3.0≤AAG/(AG**12**+AG**56**) is satisfied.

In the optical imaging lens set of six lens elements of the present invention, the relationship (AG**34**+AG**56**)/AG**23**≤1.2 is satisfied.

In the optical imaging lens set of six lens elements of the present invention, the relationship AAG/T**6**≤2.0 is satisfied.

In the optical imaging lens set of six lens elements of the present invention, the relationship T**5**/T**2**≤2.0 is satisfied.

In the optical imaging lens set of six lens elements of the present invention, the relationship T**1**/T**3**≤1.4 is satisfied.

In the optical imaging lens set of six lens elements of the present invention, the relationship 1.0≤T**4**/AG**23** is satisfied.

In the optical imaging lens set of six lens elements of the present invention, the relationship AAG/(AG**12**+AG**34**)≤6.5 is satisfied.

In the optical imaging lens set of six lens elements of the present invention, the relationship AAG/T**2**≤4.8 is satisfied.

In the optical imaging lens set of six lens elements of the present invention, the relationship ALT/T**4**≤9.0 is satisfied.

In the optical imaging lens set of six lens elements of the present invention, the relationship T**6**/AG**23**≤2.8 is satisfied.

In the optical imaging lens set of six lens elements of the present invention, the relationship 1.2≤T**3**/T**5** is satisfied.

In the optical imaging lens set of six lens elements of the present invention, the relationship AG**23**/(AG**12**+AG**34**) ≤1.85 is satisfied.

In the optical imaging lens set of six lens elements of the present invention, the relationship 5.0≤ALT/T**5** is satisfied.

In the optical imaging lens set of six lens elements of the present invention, the relationship T5/T4≤1.5 is satisfied.

In the optical imaging lens set of six lens elements of the present invention, the relationship AAG/T4≤3.3 is satisfied.

The present invention also proposes an electronic device which includes the optical imaging lens set as described above. The electronic device includes a case and an image module disposed in the case. The image module includes an optical imaging lens set as described above, a barrel for the installation of the optical imaging lens set, a module housing unit for the installation of the barrel, a substrate for the installation of the module housing unit, and an image sensor disposed on the substrate and at an image side of the optical imaging lens set.

These and other objectives of the present invention will no doubt become obvious to those of ordinary skill in the art after reading the following detailed description of the preferred embodiment that is illustrated in the various figures and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** illustrates a first example of the optical imaging lens set of the present invention.

FIG. **2**A illustrates the longitudinal spherical aberration on the image plane of the first example.

FIG. **2**B illustrates the astigmatic aberration on the sagittal direction of the first example.

FIG. **2**C illustrates the astigmatic aberration on the tangential direction of the first example.

FIG. **2**D illustrates the distortion aberration of the first example.

FIG. **3** illustrates a second example of the optical imaging lens set of six lens elements of the present invention.

FIG. **4**A illustrates the longitudinal spherical aberration on the image plane of the second example.

FIG. **4**B illustrates the astigmatic aberration on the sagittal direction of the second example.

FIG. **4**C illustrates the astigmatic aberration on the tangential direction of the second example.

FIG. **4**D illustrates the distortion aberration of the second example.

FIG. **5** illustrates a third example of the optical imaging lens set of six lens elements of the present invention.

FIG. **6**A illustrates the longitudinal spherical aberration on the image plane of the third example.

FIG. **6**B illustrates the astigmatic aberration on the sagittal direction of the third example.

FIG. **6**C illustrates the astigmatic aberration on the tangential direction of the third example.

FIG. **6**D illustrates the distortion aberration of the third example.

FIG. **7** illustrates a fourth example of the optical imaging lens set of six lens elements of the present invention.

FIG. **8**A illustrates the longitudinal spherical aberration on the image plane of the fourth example.

FIG. **8**B illustrates the astigmatic aberration on the sagittal direction of the fourth example.

FIG. **8**C illustrates the astigmatic aberration on the tangential direction of the fourth example.

FIG. **8**D illustrates the distortion aberration of the fourth example.

FIG. **9** illustrates a fifth example of the optical imaging lens set of six lens elements of the present invention.

FIG. **10**A illustrates the longitudinal spherical aberration on the image plane of the fifth example.

FIG. **10**B illustrates the astigmatic aberration on the sagittal direction of the fifth example.

FIG. **10**C illustrates the astigmatic aberration on the tangential direction of the fifth example.

FIG. **10**D illustrates the distortion aberration of the fifth example.

FIG. **11** illustrates a sixth example of the optical imaging lens set of six lens elements of the present invention.

FIG. **12**A illustrates the longitudinal spherical aberration on the image plane of the sixth example.

FIG. **12**B illustrates the astigmatic aberration on the sagittal direction of the sixth example.

FIG. **12**C illustrates the astigmatic aberration on the tangential direction of the sixth example.

FIG. **12**D illustrates the distortion aberration of the sixth example.

FIG. **13** illustrates a seventh example of the optical imaging lens set of six lens elements of the present invention.

FIG. **14**A illustrates the longitudinal spherical aberration on the image plane of the seventh example.

FIG. **14**B illustrates the astigmatic aberration on the sagittal direction of the seventh example.

FIG. **14**C illustrates the astigmatic aberration on the tangential direction of the seventh example.

FIG. **14**D illustrates the distortion aberration of the seventh example.

FIG. **15** illustrates exemplificative shapes of the optical imaging lens element of the present invention.

FIG. **16** illustrates a first preferred example of the portable electronic device with an optical imaging lens set of the present invention.

FIG. **17** illustrates a second preferred example of the portable electronic device with an optical imaging lens set of the present invention.

FIG. **18** shows the optical data of the first example of the optical imaging lens set.

FIG. **19** shows the aspheric surface data of the first example.

FIG. **20** shows the optical data of the second example of the optical imaging lens set.

FIG. **21** shows the aspheric surface data of the second example.

FIG. **22** shows the optical data of the third example of the optical imaging lens set.

FIG. **23** shows the aspheric surface data of the third example.

FIG. **24** shows the optical data of the fourth example of the optical imaging lens set.

FIG. **25** shows the aspheric surface data of the fourth example.

FIG. **26** shows the optical data of the fifth example of the optical imaging lens set.

FIG. **27** shows the aspheric surface data of the fifth example.

FIG. **28** shows the optical data of the sixth example of the optical imaging lens set.

FIG. **29** shows the aspheric surface data of the sixth example.

FIG. **30** shows the optical data of the seventh example of the optical imaging lens set.

FIG. **31** shows the aspheric surface data of the seventh example.

FIG. **32** shows some important ratios in the examples.

DETAILED DESCRIPTION

Before the detailed description of the present invention, the first thing to be noticed is that in the present invention, similar

(not necessarily identical) elements are labeled as the same numeral references. In the entire present specification, "a certain lens element has negative/positive refractive power" refers to the part in a vicinity of the optical axis of the lens element has negative/positive refractive power. "An object-side/image-side surface of a certain lens element has a concave/convex part" refers to the part is more concave/convex in a direction parallel with the optical axis to be compared with an outer region next to the region. Taking FIG. **15** for example, the optical axis is "I" and the lens element is symmetrical with respect to the optical axis I. The object side of the lens element has a convex part in the region A, a concave part in the region B, and a convex part in the region C because region A is more convex in a direction parallel with the optical axis than an outer region (region B) next to region A, region B is more concave than region C and region C is similarly more convex than region E. "A circular periphery of a certain lens element" refers to a circular periphery region of a surface on the lens element for light to pass through, that is, region C in the drawing. In the drawing, imaging light includes Lc (chief ray) and Lm (marginal ray). "A vicinity of the optical axis" refers to an optical axis region of a surface on the lens element for light to pass through, that is, the region A in FIG. **15**. In addition, the lens element may include an extension part E for the lens element to be installed in an optical imaging lens set. Ideally speaking, no light would pass through the extension part, and the actual structure and shape of the extension part is not limited to this and may have other variations. For the reason of simplicity, the extension part is not illustrated in FIGS. **1**, **3**, **5**, **7**, **9**, **11** and **13**.

As shown in FIG. **1**, the optical imaging lens set **1** of six lens elements of the present invention, sequentially located from an object side **2** (where an object is located) to an image side **3** along an optical axis **4**, has an aperture stop **80**, a first lens element **10**, a second lens element **20**, a third lens element **30**, a fourth lens element **40**, a fifth lens element **50**, a sixth lens element **60**, a filter **72** and an image plane **71**. Generally speaking, the first lens element **10**, the second lens element **20**, the third lens element **30**, the fifth lens element **50** and the sixth lens element **60** may be made of a transparent plastic material and each has an appropriate refractive power. There are exclusively six lens elements with refractive power in the optical imaging lens set **1** of the present invention. The optical axis **4** is the optical axis of the entire optical imaging lens set **1**, and the optical axis of each of the lens elements coincides with the optical axis of the optical imaging lens set **1**.

Furthermore, the optical imaging lens set **1** includes an aperture stop (ape. stop) **80** disposed in an appropriate position. In FIG. **1**, the aperture stop **80** is disposed between the object side **2** and the first lens element **10**. When light emitted or reflected by an object (not shown) which is located at the object side **2** enters the optical imaging lens set **1** of the present invention, it forms a clear and sharp image on the image plane **71** at the image side **3** after passing through the aperture stop **80**, the first lens element **10**, the second lens element **20**, the third lens element **30**, the fourth lens element **40**, the fifth lens element **50**, the sixth lens element **60** and the filter **72**.

In the embodiments of the present invention, the optional filter **72** may be a filter of various suitable functions, for example, the filter **72** may be an infrared cut filter (IR cut filter), placed between the sixth lens element **60** and the image plane **71**. The filter **72** is made of glass, without affecting the focal length of the optical lens element system, namely the optical imaging lens set, of the present invention.

Each lens element in the optical imaging lens set **1** of the present invention has an object-side surface facing toward the object side **2** as well as an image-side surface facing toward the image side **3**. In addition, each object-side surface and image-side surface in the optical imaging lens set **1** of the present invention has a part in a vicinity of its circular periphery (circular periphery part) away from the optical axis **4** as well as a part in a vicinity of the optical axis (optical axis part) close to the optical axis **4**. For example, the first lens element **10** has a first object-side surface **11** and a first image-side surface **12**; the second lens element **20** has a second object-side surface **21** and a second image-side surface **22**; the third lens element **30** has a third object-side surface **31** and a third image-side surface **32**; the fourth lens element **40** has a fourth object-side surface **41** and a fourth image-side surface **42**; the fifth lens element **50** has a fifth object-side surface **51** and a fifth image-side surface **52**; and the sixth lens element **60** has a sixth object-side surface **61** and a sixth image-side surface **62**.

Each lens element in the optical imaging lens set **1** of the present invention further has a central thickness on the optical axis **4**. For example, the first lens element **10** has a first lens element thickness T**1**, the second lens element **20** has a second lens element thickness T**2**, the third lens element **30** has a third lens element thickness T**3**, the fourth lens element **40** has a fourth lens element thickness T**4**, the fifth lens element **50** has a fifth lens element thickness T**5**, and the sixth lens element **60** has a sixth lens element thickness T**6**. Therefore, the total thickness of all the lens elements in the optical imaging lens set **1** along the optical axis **4** is ALT=T**1**+T**2**+T**3**+T**4**+T**5**+T**6**.

In addition, between two adjacent lens elements in the optical imaging lens set **1** of the present invention there is an air gap along the optical axis **4**. For example, an air gap AG**12** is disposed between the first lens element **10** and the second lens element **20**, an air gap AG**23** is disposed between the second lens element **20** and the third lens element **30**, an air gap AG**34** is disposed between the third lens element **30** and the fourth lens element **40**, an air gap AG**45** is disposed between the fourth lens element **40** and the fifth lens element **50**, and an air gap AG**56** is disposed between the fifth lens element **50** and the sixth lens element **60**. Therefore, the sum of total five air gaps between adjacent lens elements from the first lens element **10** to the sixth lens element **60** along the optical axis **4** is AAG, AAG=AG**12**+AG**23**+AG**34**+AG**45**+AG**56**.

First Example

Please refer to FIG. **1** which illustrates the first example of the optical imaging lens set **1** of the present invention. Please refer to FIG. **2**A for the longitudinal spherical aberration on the image plane **71** of the first example; please refer to FIG. **2**B for the astigmatic field aberration on the sagittal direction; please refer to FIG. **2**C for the astigmatic field aberration on the tangential direction, and please refer to FIG. **2**D for the distortion aberration. The Y axis of the spherical aberration in each example is "field of view" for 1.0. The Y axis of the astigmatic field and the distortion in each example stand for "image height". The image height is 3.085 mm.

The optical imaging lens set **1** of the first example has six lens elements **10** to **60**; all of the lens elements are made of a plastic material and have refractive power. The optical imaging lens set **1** also has an aperture stop **80**, a filter **72**, and an image plane **71**. The aperture stop **80** is provided between the object side **2** and the first lens element **10**. The filter **72** may be

used for preventing specific wavelength light (such as the Infrared light) reaching the image plane to adversely affect the imaging quality.

The first lens element **10** has positive refractive power. The first object-side surface **11** facing toward the object side **2** is a convex surface, having a convex part **13** in the vicinity of the optical axis and a convex part **14** in a vicinity of its circular periphery; The first image-side surface **12** facing toward the image side **3** is a convex surface, having a convex part **16** in the vicinity of the optical axis and a convex part **17** in a vicinity of its circular periphery.

The second lens element **20** has negative refractive power. The second object-side surface **21** facing toward the object side **2** has a convex part **23** in the vicinity of the optical axis and a concave part **24** in a vicinity of its circular periphery. The second image-side surface **22** facing toward the image side **3** is a concave surface, having a concave part **26** in the vicinity of the optical axis and a concave part **27** in a vicinity of its circular periphery.

The third lens element **30** has positive refractive power. The third object-side surface **31** facing toward the object side **2** has a convex part **33** in the vicinity of the optical axis and a concave part **34** in a vicinity of its circular periphery; The third image-side surface **32** facing toward the image side **3** has a convex part **36** in the vicinity of the optical axis and a concave part **37** in a vicinity of its circular periphery.

The fourth lens element **40** has negative refractive power. The fourth object-side surface **41** facing toward the object side **2** has a concave part **43** in the vicinity of the optical axis and a concave part **44** in a vicinity of its circular periphery; the fourth image-side surface **42** facing toward the image side **3** has a convex part **46** in the vicinity of the optical axis and a convex part **47** in a vicinity of its circular periphery

The fifth lens element **50** has negative refractive power. The fifth object-side surface **51** facing toward the object side **2** is a concave surface, having a concave part **53** in the vicinity of the optical axis and a concave part **54** in a vicinity of its circular periphery; The fifth image-side surface **52** facing toward the image side **3** is a convex surface, having a convex part **56** in the vicinity of the optical axis and a convex part **57** in a vicinity of its circular periphery.

The sixth lens element **60** has positive refractive power. The sixth object-side surface **61** facing toward the object side **2** has a convex part **63** in the vicinity of the optical axis and a concave part **64** in a vicinity of its circular periphery; The sixth image-side surface **62** facing toward the image side **3** has a concave part **66** in the vicinity of the optical axis and a convex part **67** in a vicinity of its circular periphery. The filter **72** may be disposed between the sixth lens element **60** and the image plane **71**.

In the optical imaging lens element **1** of the present invention, the object-side surfaces **11/21/31/41/51/61** and image-side surfaces **12/22/32/42/52/62** are all aspherical. These aspheric coefficients are defined according to the following formula:

$$Z(Y) = \frac{Y^2}{R} \Big/ \left(1 + \sqrt{1 - (1+K)\frac{Y^2}{R^2}}\right) + \sum_{i=1}^{n} a_{2i} \times Y^{2i}$$

In which:

R represents the curvature radius of the lens element surface;

Z represents the depth of an aspherical surface (the perpendicular distance between the point of the aspherical surface at a distance Y from the optical axis and the tangent plane of the vertex on the optical axis of the aspherical surface);

Y represents a vertical distance from a point on the aspherical surface to the optical axis;

K is a conic constant;

a2i is the aspheric coefficient of the 2i order.

The optical data of the first example of the optical imaging lens set **1** are shown in FIG. **18** while the aspheric surface data are shown in FIG. **19**. In the present examples of the optical imaging lens set, the f-number of the entire optical lens element system is Fno, HFOV stands for the half field of view which is half of the field of view of the entire optical lens element system, and the unit for the curvature radius, the thickness and the focal length is in millimeters (mm). The length of the optical imaging lens set (the distance from the first object-side surface **11** of the first lens element **10** to the image plane **71**) is 4.978 mm. The image height is 3.0 mm, HFOV is 38.86 degrees. Some important ratios of the first example are as follows:

T**1**/AG**45**=1.996
T**6**/T**2**=2.226
T**5**/T**2**=1.278
AAG/T**2**=3.722
AG**23**/(AG**12**+AG**34**)=1.553
AAG/(AG**12**+AG**56**)=4.932
(AG**34**+AG**56**)/AG**23**=0.698
AAG/T**6**=1.672
T**1**/T**3**=1.377
T**4**/AG**23**=1.338
AAG/(AG**12**+AG**34**)=4.975
ALT/T**4**=7.004
T**6**/AG**23**=1.916
T**3**/T**5**=1.590
ALT/T**5**=8.521
T**5**/T**4**=0.822
AAG/T**4**=2.394

Second Example

Please refer to FIG. **3** which illustrates the second example of the optical imaging lens set **1** of the present invention. It is noted that from the second example to the following examples, in order to simplify the figures, only the components different from what the first example has and the basic lens elements will be labeled in figures. Others components that are the same as what the first example has, such as the object-side surface, the image-side surface, the part in a vicinity of the optical axis and the part in a vicinity of its circular periphery will be omitted in the following example. Please refer to FIG. **4**A for the longitudinal spherical aberration on the image plane **71** of the second example; please refer to FIG. **4**B for the astigmatic aberration on the sagittal direction; please refer to FIG. **4**C for the astigmatic aberration on the tangential direction, and please refer to FIG. **4**D for the distortion aberration. The components in the second example are similar to those in the first example, but the optical data such as the curvature radius, the refractive power, the lens thickness, the lens focal length, the aspheric surface or the back focal length in this example are different from the optical data in the first example, and in this example, the third object-side surface **31** of the third lens element **30** has a convex part **33**A in the vicinity of the optical axis and a concave part **34**A in a vicinity of its circular periphery. The optical data of the second example of the optical imaging lens set are shown in FIG. **20** while the aspheric surface data are shown in FIG. **21**. The length of the optical imaging lens set is 5.052 mm. The image

height is 3.085 mm, HFOV is 40.00 degrees. Some important ratios of the second example are as follows:

T1/AG45=1.382
T6/T2=3.492
T5/T2=1.269
AAG/T2=3.935
AG23/(AG12+AG34)=1.664
AAG/(AG12+AG56)=5.148
(AG34+AG56)/AG23=0.459
AAG/T6=1.127
T1/T3=1.094
T4/AG23=1.238
AAG/(AG12+AG34)=5.178
ALT/T4=7.414
T6/AG23=2.762
T3/T5=1.610
ALT/T5=9.145
T5/T4=0.811
AAG/T4=2.514

Third Example

Please refer to FIG. **5** which illustrates the third example of the optical imaging lens set **1** of the present invention. Please refer to FIG. **6**A for the longitudinal spherical aberration on the image plane **71** of the third example; please refer to FIG. **6**B for the astigmatic aberration on the sagittal direction; please refer to FIG. **6**C for the astigmatic aberration on the tangential direction, and please refer to FIG. **6**D for the distortion aberration. The components in the third example are similar to those in the first example, but the optical data such as the curvature radius, the refractive power, the lens thickness, the lens focal length, the aspheric surface or the back focal length in this example are different from the optical data in the first example, and in this example, the second image-side surface **22** of the second lens element **20** has a concave part **26**B in the vicinity of the optical axis and a convex part **27**B in a vicinity of its circular periphery; the third object-side surface **31** of the third lens element **30** has a convex part **33**B in the vicinity of the optical axis and a concave part **34**B in a vicinity of its circular periphery; the third image-side surface **32** of the third lens element **30** is a convex surface, having a convex part **36**B in the vicinity of the optical axis and a convex part **37**B in a vicinity of its circular periphery. The optical data of the third example of the optical imaging lens set are shown in FIG. **22** while the aspheric surface data are shown in FIG. **23**. The length of the optical imaging lens set is 5.171 mm. The image height is 3.085 mm, HFOV is 39.99 degrees. Some important ratios of the third example are as follows:

T1/AG45=1.582
T6/T2=2.268
T5/T2=1.896
AAG/T2=3.603
AG23/(AG12+AG34)=1.610
AAG/(AG12+AG56)=5.089
(AG34+AG56)/AG23=0.520
AAG/T6=1.588
T1/T3=0.847
T4/AG23=1.063
AAG/(AG12+AG34)=4.698
ALT/T4=8.379
T6/AG23=1.838
T3/T5=1.291
ALT/T5=5.801
T5/T4=1.444
AAG/T4=2.745

Fourth Example

Please refer to FIG. **7** which illustrates the fourth example of the optical imaging lens set **1** of the present invention. Please refer to FIG. **8**A for the longitudinal spherical aberration on the image plane **71** of the fourth example; please refer to FIG. **8**B for the astigmatic aberration on the sagittal direction; please refer to FIG. **8**C for the astigmatic aberration on the tangential direction, and please refer to FIG. **8**D for the distortion aberration. The components in the fourth example are similar to those in the first example, but the optical data such as the curvature radius, the refractive power, the lens thickness, the lens focal length, the aspheric surface or the back focal length in this example are different from the optical data in the first example, and in this example, the second image-side surface **22** of the second lens element **20** has a concave part **26**C in the vicinity of the optical axis and a convex part **27**C in a vicinity of its circular periphery; the third object-side surface **31** of the third lens element **30** has a convex part **33**C in the vicinity of the optical axis and a concave part **34**C in a vicinity of its circular periphery; the third image-side surface **32** of the third lens element **30** is a convex surface, having a convex part **36**C in the vicinity of the optical axis and a convex part **37**C in a vicinity of its circular periphery. The optical data of the fourth example of the optical imaging lens set are shown in FIG. **24** while the aspheric surface data are shown in FIG. **25**. The length of the optical imaging lens set is 5.034 mm. The image height is 3.085 mm, HFOV is 39.85 degrees. Some important ratios of the fourth example are as follows:

T1/AG45=1.002
T6/T2=2.449
T5/T2=1.251
AAG/T2=4.699
AG23/(AG12+AG34)=1.772
AAG/(AG12+AG56)=4.907
(AG34+AG56)/AG23=0.593
AAG/T6=1.919
T1/T3=0.978
T4/AG23=1.099
AAG/(AG12+AG34)=6.253
ALT/T4=7.145
T6/AG23=1.839
T3/T5=1.734
ALT/T5=8.358
T5/T4=0.855
AAG/T4=3.212

Fifth Example

Please refer to FIG. **9** which illustrates the fifth example of the optical imaging lens set **1** of the present invention. Please refer to FIG. **10**A for the longitudinal spherical aberration on the image plane **71** of the fifth example; please refer to FIG. **10**B for the astigmatic aberration on the sagittal direction; please refer to FIG. **10**C for the astigmatic aberration on the tangential direction, and please refer to FIG. **10**D for the distortion aberration. The components in the fifth example are similar to those in the first example, but the optical data such as the curvature radius, the refractive power, the lens thickness, the lens focal length, the aspheric surface or the back focal length in this example are different from the optical data in the first example, and in this example, the fifth image-side surface **52** of the fifth lens element **50** has a convex part **56**D in the vicinity of the optical axis and a concave part **57**D in a

vicinity of its circular periphery. The optical data of the fifth example of the optical imaging lens set are shown in FIG. **26** while the aspheric surface data are shown in FIG. **27**. The length of the optical imaging lens set is 4.958 mm. The image height is 3.0 mm, HFOV is 39.11 degrees. Some important ratios of the fifth example are as follows:

T**1**/AG**45**=1.676
T**6**/T**2**=1.617
T**5**/T**2**=0.916
AAG/T**2**=2.511
AG**23**/(AG**12**+AG**34**)=1.816
AAG/(AG**12**+AG**56**)=5.921
(AG**34**+AG**56**)/AG**23**=0.553
AAG/T**6**=1.552
T**1**/T**3**=1.112
T**4**/AG**23**=1.408
AAG/(AG**12**+AG**34**)=5.489
ALT/T**4**=6.767
T**6**/AG**23**=1.946
T**3**/T**5**=1.661
ALT/T**5**=8.642
T**5**/T**4**=0.783
AAG/T**4**=2.146

Sixth Example

Please refer to FIG. **11** which illustrates the sixth example of the optical imaging lens set **1** of the present invention. Please refer to FIG. **12**A for the longitudinal spherical aberration on the image plane **71** of the sixth example; please refer to FIG. **12**B for the astigmatic aberration on the sagittal direction; please refer to FIG. **12**C for the astigmatic aberration on the tangential direction, and please refer to FIG. **12**D for the distortion aberration. The components in the sixth example are similar to those in the first example, but the optical data such as the curvature radius, the refractive power, the lens thickness, the lens focal length, the aspheric surface or the back focal length in this example are different from the optical data in the first example, and in this example, the second image-side surface **22** of the second lens element **20** has a concave part **26**E in the vicinity of the optical axis and a convex part **27**E in a vicinity of its circular periphery. The optical data of the sixth example of the optical imaging lens set are shown in FIG. **28** while the aspheric surface data are shown in FIG. **29**. The length of the optical imaging lens set is 4.903 mm. The image height is 3.0 mm, HFOV is 39.21 degrees. Some important ratios of the sixth example are as follows:

T**1**/AG**45**=1.276
T**6**/T**2**=2.266
T**5**/T**2**=1.295
AAG/T**2**=4.239
AG**23**/(AG**12**+AG**34**)=0.813
AAG/(AG**12**+AG**56**)=4.765
(AG**34**+AG**56**)/AG**23**=0.932
AAG/T**6**=1.871
T**1**/T**3**=1.051
T**4**/AG**23**=1.386
AAG/(AG**12**+AG**34**)=3.354
ALT/T**4**=7.101
T**6**/AG**23**=2.206
T**3**/T**5**=1.554
ALT/T**5**=7.808
T**5**/T**4**=0.909
AAG/T**4**=2.978

Seventh Example

Please refer to FIG. **13** which illustrates the seventh example of the optical imaging lens set **1** of the present invention. Please refer to FIG. **14**A for the longitudinal spherical aberration on the image plane **71** of the seventh example; please refer to FIG. **14**B for the astigmatic aberration on the sagittal direction; please refer to FIG. **14**C for the astigmatic aberration on the tangential direction, and please refer to FIG. **14**D for the distortion aberration. The components in the seventh example are similar to those in the first example, but the optical data such as the curvature radius, the refractive power, the lens thickness, the lens focal length, the aspheric surface or the back focal length in this example are different from the optical data in the first example, and in this example, the fifth image-side surface **52** of the fifth lens element **50** has a convex part **56**F in the vicinity of the optical axis and a concave part **57**F in a vicinity of its circular periphery. The optical data of the seventh example of the optical imaging lens set are shown in FIG. **30** while the aspheric surface data are shown in FIG. **31**. The length of the optical imaging lens set is 4.982 mm. The image height is 3.0 mm, HFOV is 38.81 degrees. Some important ratios of the sixth example are as follows:

T**1**/AG**45**=2.007
T**6**/T**2**=2.237
T**5**/T**2**=1.251
AAG/T**2**=4.010
AG**23**/(AG**12**+AG**34**)=1.243
AAG/(AG**12**+AG**56**)=3.301
(AG**34**+AG**56**)/AG**23**=1.083
AAG/T**6**=1.793
T**1**/T**3**=1.153
T**4**/AG**23**=1.269
AAG/(AG**12**+AG**34**)=4.302
ALT/T**4**=6.984
T**6**/AG**23**=1.931
T**3**/T**5**=1.600
ALT/T**5**=8.208
T**5**/T**4**=0.851
AAG/T**4**=2.727

Some important ratios in each example are shown in FIG. **32**. In light of the above examples, the inventors observe the following features:

The first lens element has positive refractive power, to provide the needed refractive power for the optical imaging lens set. The second lens element has negative refractive power, to correct aberration. In addition, the aperture stop is disposed between the object side and the first lens element, helping to collect the image light and decreasing the total length of the optical imaging lens set. Besides, the first object-side surface of the first lens element has a convex part in a vicinity of the optical axis and a convex part in a vicinity of its circular periphery can help to collect the image light; the second object-side surface of the second lens element has a concave part in a vicinity of its circular periphery, the third object-side surface of the third lens element has a concave part in a vicinity of its circular periphery, the third image-side surface of the third lens element has a convex part in a vicinity of the optical axis, the fourth image-side surface of the fourth lens element has a convex part in a vicinity of the optical axis, the fifth object-side surface of the fifth lens element has a concave part in a vicinity of its periphery, the fifth image-side surface of the fifth lens element has a convex part in a vicinity of the optical axis, and the sixth image-side surface of the

sixth lens element has a convex part in a vicinity of its periphery, where each of the surfaces matches each other, in order to improve the aberration.

In addition, the inventors discover that there are some better ratio ranges for different data according to the above various important ratios. Better ratio ranges help the designers to design the better optical performance and an effectively reduced length of a practically possible optical imaging lens set. For example:

(1) T1/AG45≤2.1:

AG45 is an air gap between said fourth lens element and said fifth lens element along the optical axis. If AG45 is maintained within a relatively large value, it would help to increase the optical performance. And T1 is the thickness of the first lens element, and decreasing T1 can help for shrinking the total length of the optical imaging lens set. Therefore, T1/AG45 should preferably be small. If the relationship T1/AG45≤2.1 is satisfied, ideally, it is suggested that the range may be 0.8~2.1.

(2) AAG/T2≤4.8, AAG/T6≤2.0, AAG/T4≤3.3:

AAG is the sum of total five air gaps between adjacent lens elements from the first lens element to the sixth lens element along the optical axis. Decreasing AAG can help for shrinking the total length of the optical imaging lens set. And T2, T4 T6 are the thicknesses of the second lens element, the fourth lens element and the sixth lens element along said optical axis respectively. Considering the difficulties of during the manufacturing process, T2, T4 and T6 cannot be shrunk effectively, but AAG can be shrunk more compared with T2, T4 and T6. Therefore, AAG/T2, AAG/T6 and AAG/T4 should preferably be small. If the relationship AAG/T2≤4.8 is satisfied, ideally, it is suggested that the range may be 2.0~4.8; If the relationship AAG/T6≤2.0 is satisfied, ideally, it is suggested that the range may be 0.8~2.0; If the relationship AAG/T4 is satisfied, ideally, it is suggested that the range may be 2.0~3.3.

(3) T6/T2≤3.5, T5/T2≤2.0, T1/T3≤1.4, ALT/T4≤9.0, T3/T5≥1.2, ALT/T5≥5.0, T5/T4≤1.5:

T1~T6 are the thicknesses of the first lens element to the sixth lens element along said optical axis respectively. ALT is the total thickness of said first lens element, said second lens element, said third lens element, said fourth lens element, said fifth lens element and said sixth lens element along said optical axis. Those parameters should be maintained within a suitable value range. Otherwise, the total length cannot be thinned if one lens element has too big central thickness, or it's difficult to manufacture the optical imaging lens set if one lens element has too small central thickness. If the relationship T6/T2≤3.5 is satisfied, ideally, it is suggested that the range may be 1.5~3.5; If the relationship T5/T2≤2.0 is satisfied, ideally, it is suggested that the range may be 0.8~2.0; If the relationship T1/T3≤1.4 is satisfied, ideally, it is suggested that the range may be 0.7~1.4; If the relationship ALT/T4≤9.0 is satisfied, ideally, it is suggested that the range may be 5.0~9.0; If the relationship T3/T5≥1.2 is satisfied, ideally, it is suggested that the range may be 1.2~2.0; If the relationship ALT/T5≥5.0 is satisfied, ideally, it is suggested that the range may be 5.0~10.0; If the relationship T5/T4≤1.5 is satisfied, ideally, it is suggested that the range may be 0.7~1.5.

(4) AG23/(AG12+AG34)≤1.85, AAG/(AG12+AG56)≥3.0, (AG34+AG56)/AG 23≤1.2, AAG/(AG12+AG34)≤6.5:

AG12 is an air gap between said first lens element and said second lens element along the optical axis. AG23 is an air gap between said second lens element and said third lens element along the optical axis. AG34 is an air gap between said third lens element and said fourth lens element along the optical axis. AG56 is an air gap between said fifth lens element and said sixth lens element along the optical axis. AAG is the sum of total five air gaps between adjacent lens elements from the first lens element to the sixth lens element along the optical axis. As mentioned above, those parameters should be maintained within a suitable value range. Otherwise, the total length cannot be thinned if every two adjacent lens elements have too big air gap, or it's difficult to manufacture the optical imaging lens set if every two adjacent lens elements have too small air gap. If the relationship AG23/(AG12+AG34)≤1.85 is satisfied, ideally, it is suggested that the range may be 0.7~1.85; If the relationship AAG/(AG12+AG56)≥3.0 is satisfied, ideally, it is suggested that the range may be 3.0~7.0; If the relationship (AG34+AG56)/AG23≤1.2 is satisfied, ideally, it is suggested that the range may be 0.3~1.2; If the relationship AAG/(AG12+AG34)≤6.5 is satisfied, ideally, it is suggested that the range may be 3.0~6.5.

(5) Preferably, T4/AG23 is suggested to be larger than or equal to 1.0; T6/AG23 is suggested to be smaller than or equal to 2.8, avoiding AG23 being too big or too small; T4/AG23 is suggested to be between 1.0~1.6; T6/AG23 is suggested to be between 1.5~2.8.

The optical imaging lens set 1 of the present invention may be applied to an electronic device, such as mobile phones or driving recorders. Please refer to FIG. 16. FIG. 16 illustrates a first preferred example of the optical imaging lens set 1 of the present invention for use in a portable electronic device 100. The electronic device 100 includes a case 110, and an image module 120 mounted in the case 110. A mobile phone is illustrated in FIG. 16 as an example, but the electronic device 100 is not limited to a mobile phone.

As shown in FIG. 16, the image module 120 includes the optical imaging lens set 1 as described above. FIG. 16 illustrates the aforementioned first example of the optical imaging lens set 1. In addition, the portable electronic device 100 also contains a barrel 130 for the installation of the optical imaging lens set 1, a module housing unit 140 for the installation of the barrel 130, a substrate 172 for the installation of the module housing unit 140 and an image sensor 70 disposed at the substrate 172, and at the image side 3 of the optical imaging lens set 1. The image sensor 70 in the optical imaging lens set 1 may be an electronic photosensitive element, such as a charge coupled device or a complementary metal oxide semiconductor element. The image plane 71 forms at the image sensor 70.

The image sensor 70 used here is a product of chip on board (COB) package rather than a product of the conventional chip scale package (CSP) so it is directly attached to the substrate 172, and protective glass is not needed in front of the image sensor 70 in the optical imaging lens set 1, but the present invention is not limited to this.

To be noticed in particular, the optional filter 72 may be omitted in other examples although the optional filter 72 is present in this example. The case 110, the barrel 130, and/or the module housing unit 140 may be a single element or consist of a plurality of elements, but the present invention is not limited to this.

Each one of the six lens elements 10, 20, 30, 40, 50 and 60 with refractive power is installed in the barrel 130 with air gaps disposed between two adjacent lens elements in an exemplary way. The module housing unit 140 has a lens element housing 141, and an image sensor housing 146 installed between the lens element housing 141 and the image sensor 70. However in other examples, the image sensor housing 146 is optional. The barrel 130 is installed coaxially along with the lens element housing 141 along the axis I-I', and the barrel 130 is provided inside of the lens element housing 141.

Please also refer to FIG. **17** for another application of the aforementioned optical imaging lens set **1** in a portable electronic device **200** in the second preferred example. The main differences between the portable electronic device **200** in the second preferred example and the portable electronic device **100** in the first preferred example are: the lens element housing **141** has a first seat element **142**, a second seat element **143**, a coil **144** and a magnetic component **145**. The first seat element **142** is for the installation of the barrel **130**, exteriorly attached to the barrel **130** and disposed along the axis I-I'. The second seat element **143** is disposed along the axis I-I' and surrounds the exterior of the first seat element **142**. The coil **144** is provided between the outside of the first seat element **142** and the inside of the second seat element **143**. The magnetic component **145** is disposed between the outside of the coil **144** and the inside of the second seat element **143**.

The first seat element **142** may pull the barrel **130** and the optical imaging lens set **1** which is disposed inside of the barrel **130** to move along the axis I-I', namely the optical axis **4** in FIG. **1**. The image sensor housing **146** is attached to the second seat element **143**. The filter **72**, such as an infrared filter, is installed at the image sensor housing **146**. Other details of the portable electronic device **200** in the second preferred example are similar to those of the portable electronic device **100** in the first preferred example so they are not elaborated again.

Those skilled in the art will readily observe that numerous modifications and alterations of the device and method may be made while retaining the teachings of the invention. Accordingly, the above disclosure should be construed as limited only by the metes and bounds of the appended claims.

What is claimed is:

1. An optical imaging lens set, from an object side toward an image side in order along an optical axis comprising: an aperture stop, a first lens element, a second lens element, a third lens element, a fourth lens element, a fifth lens element and a sixth lens element, said first to sixth lens elements having an object-side surface facing toward the object side as well as an image-side surface facing toward the image side, wherein:

the first lens element has a positive refracting power, an object-side surface is a convex surface, having a convex part in a vicinity of the optical axis, and a convex part in a vicinity of its periphery;

the second lens element has a negative refracting power and an object-side surface with a concave part in a vicinity of its periphery;

the third lens element has an object-side surface with a concave part in a vicinity of its periphery, and an image-side surface with a convex part in a vicinity of the optical axis;

the fourth lens has an image-side surface with a convex part in a vicinity of the optical axis;

the fifth lens element has an object-side surface with a concave part in a vicinity of its periphery, and an image-side surface with a convex part in a vicinity of the optical axis; and

the sixth lens element has an image-side surface with a convex part in a vicinity of its periphery;

the optical imaging lens set does not include any lens element with refractive power other than said first lens element, second lens element, third lens element, fourth lens element, fifth lens element and sixth lens element, in addition, a thickness T**1** of said first lens element along said optical axis, and an air gap AG**45** between said fourth lens element and said fifth lens element along said optical axis satisfy a relationship T**1**/AG**45**≤2.1.

2. The optical imaging lens set of claim **1**, wherein a thickness T**6** of said sixth lens element along said optical axis, and a thickness T**2** of said second lens element along said optical axis satisfy a relationship T**6**/T**2**≤3.5.

3. The optical imaging lens set of claim **2**, wherein the sum of all five air gaps AAG between each lens element from said first lens element to said sixth lens element along the optical axis, an air gap AG**12** between said first lens elements and said second lens element along said optical axis, and an air gap AG**56** between said fourth lens elements and said sixth lens element along said optical axis satisfy a relationship 3.0≤AAG/(AG**12**+AG**56**).

4. The optical imaging lens set of claim **2**, wherein an air gap AG**34** between said third lens elements and said fourth lens element along said optical axis, an air gap AG**56** between said fifth lens elements and said sixth lens element along said optical axis, and an air gap AG**23** between said second lens elements and said third lens element along said optical axis satisfy a relationship (AG**34**+AG**56**)/AG**23**≤1.2.

5. The optical imaging lens set of claim **2**, wherein the sum of all five air gaps AAG between each lens element from said first lens element to said sixth lens element along the optical axis satisfies a relationship AAG/T**6**≤2.0.

6. The optical imaging lens set of claim **1**, wherein a thickness T**5** of said fifth lens element along said optical axis, and a thickness T**2** of said second lens element along said optical axis satisfy a relationship T**5**/T**2**≤2.0.

7. The optical imaging lens set of claim **6**, wherein a thickness T**3** of said third lens element along said optical axis satisfies a relationship T**1**/T**3**≤1.4.

8. The optical imaging lens set of claim **6**, wherein an air gap AG**23** between said second lens elements and said third lens element along said optical axis, and a thickness T**4** of said fourth lens element along said optical axis satisfy a relationship 1.0≤T**4**/AG**23**.

9. The optical imaging lens set of claim **6**, wherein the sum of all five air gaps AAG between each lens element from said first lens element to said sixth lens element along the optical axis, an air gap AG**12** between said first lens elements and said second lens element along said optical axis, and an air gap AG**34** between said third lens elements and said fourth lens element along said optical axis satisfy a relationship AAG/(AG**12**+AG**34**)≤6.5.

10. The optical imaging lens set of claim **1**, wherein the sum of all five air gaps AAG between each lens element from said first lens element to said sixth lens element along the optical axis, and a thickness T**2** of said second lens element along said optical axis satisfy a relationship AAG/T**2**≤4.8.

11. The optical imaging lens set of claim **10**, wherein a total thickness ALT of said first lens element, said second lens element, said third lens element, said fourth lens element, said fifth lens element and said sixth lens element along said optical axis, and a thickness T**4** of said fourth lens element along said optical axis satisfy a relationship ALT/T**4**≤9.0.

12. The optical imaging lens set of claim **10**, wherein a thickness T**6** of said sixth lens element along said optical axis, and an air gap AG**23** between said second lens elements and said third lens element along said optical axis satisfy a relationship T**6**/AG**23**≤2.8.

13. The optical imaging lens set of claim **10**, wherein a thickness T**3** of said third lens element along said optical axis, and a thickness T**5** of said fifth lens element along said optical axis satisfy a relationship 1.2≤T**3**/T**5**.

14. The optical imaging lens set of claim **1**, wherein an air gap AG**12** between said first lens elements and said second lens element along said optical axis, an air gap AG**23** between said second lens elements and said third lens element along

said optical axis, and an air gap AG**34** between said third lens elements and said fourth lens element along said optical axis satisfy a relationship AG**23**/(AG**12**+AG**34**)≤1.85.

15. The optical imaging lens set of claim **14**, wherein a total thickness ALT of said first lens element, said second lens element, said third lens element, said fourth lens element, said fifth lens element and said sixth lens element along said optical axis, and a thickness T**5** of said fifth lens element along said optical axis satisfy a relationship 5.0≤ALT/T**5**.

16. The optical imaging lens set of claim **14**, wherein a thickness T**4** of said fourth lens element along said optical axis, and a thickness T**5** of said fifth lens element along said optical axis satisfy a relationship T**5**/T**4**≤1.5.

17. The optical imaging lens set of claim **14**, wherein the sum of all five air gaps AAG between each lens element from said first lens element to said sixth lens element along the optical axis, and a thickness T**4** of said fourth lens element along said optical axis satisfy a relationship AAG/T**4**≤3.3.

18. An electronic device, comprising:

a case; and

an image module disposed in said case and comprising:

an optical imaging lens set of claim **1**;

a barrel for the installation of said optical imaging lens set;

a module housing unit for the installation of said barrel;

a substrate for the installation of said module housing unit; and

an image sensor disposed on the substrate and disposed at an image side of said optical imaging lens set.

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